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# SAN FRANCISCO BAY AREA IN-DEPTH STUDY

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COMMODITY FLOW ANALYSIS

HISTORICAL COMMODITY  
MOVEMENT

JUNE 1973



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SAN FRANCISCO BAY AREA IN-DEPTH STUDY  
COMMODITY FLOW ANALYSIS  
HISTORICAL COMMODITY MOVEMENT

BY

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CONSULTANT

JUNE 1973

U.S. ARMY CORPS OF ENGINEERS  
SOUTH PACIFIC DIVISION  
SAN FRANCISCO, CALIFORNIA 94111

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SAN FRANCISCO BAY AREA IN-DEPTH STUDY  
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INTRODUCTION

1. GENERAL

This report stems from the outline of work set forth in the "Detailed Plan of Study of the San Francisco Bay In-Depth Study," dated 8 March 1971. It is concerned mainly with developing adequate basic commodity traffic data. In developing the basic data, primary reliance has been placed on existing reports, such as Corps of Engineers' Waterborne Commerce reports, U.S. Bureau of Census, U.S. Maritime Administration, various port publications, consultant reports, and other published data, as well as the knowledge and judgment of port officials and experts in the trade.

2. PURPOSE

The purpose of this report is to compile historical commodity flow data for the San Francisco Bay Regions ports and to arrange these data in an appropriate format to serve as a basis for the projection of future waterborne commodity movement for the region. The most recent data compiled for the report are those of 1970. The year 1970 was without a major shipping strike and would make a representative base year for projections.

3. SCOPE

Geographically, the study includes all the deep-draft harbors and other project areas in the San Francisco Bay Area, including the Ports of Stockton and Sacramento. Project areas, such as San Pablo Bay and Mare Island Strait,

Carquinez Strait and Suisun Bay, are served by many private terminals. Several shallow-draft channels handling internal traffic have not been included. Traffic on these waterways is not large. Historical data for each harbor area were studied in some detail for years after 1950. Only general data and trends are provided for the period prior to 1950. For the 20-year period, 1950-1970, commodity tonnage data are shown for each harbor by 5-year intervals and by major commodity groups for foreign imports and exports, coastwise shipments and receipts, and internal shipments and receipts. Appendix A contains a listing of commodities within each grouping. Corresponding dollar values are included for the aforementioned foreign commerce tonnage. The derivation of dollar values is described in Appendix B. Additionally, for years 1960, 1965, and 1970, an estimate was made for each harbor to classify all commodities into four categories: petroleum and liquid bulk cargo; dry bulk cargo; general cargo; and containerized and LASH cargo. Definitions of these categories of cargo are given in the next paragraph. Finally, for the year 1970, cargo origin and destination on a port-to-port basis was made. Appendix C gives a list of references used in developing this report.

#### 4. DEFINITION OF COMMODITY CATEGORIES

The Plan of Study for the San Francisco Bay Area In-Depth Study specifies that commodity projections will be in the categories by which the cargo is handled. These categories, as mentioned previously, are: petroleum and liquid bulk cargo; general cargo; dry bulk cargo; and containerized and LASH cargo. In keeping with the specified format for projection, historical data for the years 1960, 1965, and 1970 are presented in a similar fashion. The



definition of these cargo categories are as follows:

a. Petroleum and Liquid Bulk Cargo. This group of commodities can be shipped in tankers and barges as bulk liquids. It includes crude petroleum, petroleum products as well as molasses, bulkwines, chemicals, liquid sugar, "noodle pulp," and inedible oils and fats.

b. Dry Bulk Cargo. Dry bulk commodities as used herein are those cargoes that are loaded or unloaded in conveyor belts, spouts, scoops, and other mechanical devices, and in which the cargoes are not placed individually. This group includes such cargo as rice, grain, various ores, clay, coal, petroleum coke, oyster shells, and other bulk material.

c. General Cargo. This group comprises the large break-bulk group of conventional general cargo. It is largely packaged cargo. It is the most flexible type of all in that cargo can be handled with or without sophisticated mechanical equipment in almost any volume or form. Included in this group for purpose of this study is a "grey zone" group of commodities, sometimes referred to as "neo-bulk". These are commodities like lumber, shingles, plywood, motor vehicles, and other equipment. These commodities have some features related to dry bulk handling.

d. Containerized and LASH Cargo. Containerization is the use of large standard sized weather tight boxes for break-bulk cargo. This container concept provides for the container to be loaded at the factory or primary source, and for the cargo to remain intact in the container until it reaches its ultimate destination. This may involve transfer from ship to truck or rail. Virtually every kind of break-bulk cargo that can be physically placed on a container is potential container material. Lighter-aboard-ship

cargo (LASH) is cargo that is carried on lighters or barges, that can be taken aboard ship or discharged by a shipborne crane. The lighter or barge, is in effect, a large floating container that can carry smaller standard-sized containers, ordinary packaged (general) cargo, or bulk cargo. LASH operations did not commence until 1971, however, LASH operations will be important in the future.

#### SUMMARY BAY REGION - HISTORICAL COMMODITY FLOW

##### 5. SAN FRANCISCO BAY AREA HARBOR

Commerce at all of the deep-draft harbors and waterway areas in San Francisco, San Pablo and Suisun Bays has been considered in this study, including commerce at the Port of Sacramento and the Port of Stockton. The harbors and areas correspond generally to the Corps of Engineers' project areas, and as such, commerce statistics on waterborne commerce are directly applicable to the harbor or waterway reach involved. Several reaches comprising San Pablo Bay and Mare Island Strait, Carquinez Strait, San Joaquin River, and Suisun Bay Channel are characterized by many private terminals. In some instances, the geographic limits of these areas are rather large. This study is concerned with the commerce on the deep-water channels. Individual areas studied are as follows:

1. San Francisco Harbor
2. Redwood City Harbor
3. Oakland Harbor
4. Richmond Harbor
5. San Pablo Bay and Mare Island Strait
6. Carquinez Strait

7. Suisun Bay Channel
8. Lower San Joaquin River
9. Port of Stockton
10. Port of Sacramento

The general location of these areas is shown on the plate at the end of the report. Each of the foregoing areas is presented in succeeding sections.

a. General Trends Prior to 1950. This large complex of harbors and terminals developed over a period exceeding 100 years. In gold rush days, they were initially used to bring in the miners, then supplies and equipment. Next, they became great grain exporting ports, and this was followed by lumber. Later petroleum was discovered in the southern San Joaquin Valley and pipelines were built to refineries in the Bay Area. This crude, in conjunction with substantial quantities of coastwise crude, became the base for large exports of refined petroleum products. As the area grew, the need for petroleum products in the local area developed and resulted in a slowing down of this export trade. All during this period, general cargo developed to meet the needs of the area, and to supply domestic and foreign markets as well. While many special terminals developed to meet the specific needs, others, such as Alviso, at the southern end of San Francisco Bay, Port Costa, South Vallejo, and important grain terminals in Carquinez Strait, declined in importance. Although each harbor or terminal appears to have developed to meet some particular need, there was strong competition between them, particularly general cargo harbors. San Francisco developed into a high value general cargo port, Redwood City specialized in bulk cargo of local origin. Oakland continued as a general cargo port for the most part.



Richmond developed general cargo as well as bulk cargo facilities. A major oil terminal was also built at Richmond. San Pablo Bay and Mare Island Strait, Carquinez Strait, and Suisun Bay saw the development of many private terminals for handling petroleum, metals, ores, scrap, chemicals, pulp, and other products. The inland ports at Stockton and Sacramento developed into bulk and general cargo ports, each specializing in handling the needs and products of its own area.

b. Historic Commodity Movement, 1950-1970. Tonnage data by major commodity groups are shown on Table 1 for the 20-year period, 1950-1970, by 5-year intervals. Dollar values associated with import and export tonnages are shown on Table 2. Average growth rates for ocean and internal traffic tonnage for the periods 1950-1960 and 1960-1970, and 1950-1970 follows. Ocean commerce was divided into foreign and coastwise cargo.

| Item                  | Average Annual Compound Growth Rate, Percent/Year |             |           |
|-----------------------|---------------------------------------------------|-------------|-----------|
|                       | 1950 - 1960                                       | 1960 - 1970 | 1950-1970 |
| <u>Ocean Commerce</u> |                                                   |             |           |
| Foreign               | 13.0                                              | 1.1         | 7.0       |
| Coastwise             | 0.8                                               | 1.7         | 1.3       |
| Total, ocean          | 3.5                                               | 1.5         | 2.5       |
| Internal Traffic      | 2.3                                               | (1.9)       | 0.1       |

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for each of the ten study areas is shown in Table 3 for the selected years. An overall summary of the relative significance of each category for the San Francisco Bay Area complex is as follows:

| Item                    | Percent of Total Movements |       |       |
|-------------------------|----------------------------|-------|-------|
|                         | 1960                       | 1965  | 1970  |
| <u>Ocean Commerce</u>   |                            |       |       |
| Petroleum - Liquid Bulk | 74.2                       | 68.9  | 70.6  |
| Dry Bulk                | 12.8                       | 16.6  | 14.0  |
| General Cargo           | 13.0                       | 13.5  | 11.3  |
| Container - LASH        | 0                          | 1.0   | 4.1   |
| Total                   | 100.0                      | 100.0 | 100.0 |
| <u>Internal Traffic</u> |                            |       |       |
| Petroleum - Liquid Bulk | 81.0                       | 82.5  | 72.8  |
| Dry Bulk                | 14.6                       | 13.4  | 23.1  |
| General Cargo           | 4.4                        | 4.1   | 4.1   |
| Container - LASH        | 0                          | 0     | 0     |
| Total                   | 100.0                      | 100.0 | 100.0 |

d. Commodity Origins and Destinations:

(1) San Francisco Customs District Data. Data on commerce movements between the San Francisco Customs District and foreign countries are published by the U.S. Bureau of Census. This Customs District covers an area from Monterey Bay on the south to the Oregon border on the north. Data for this district are believed to be reasonably representative of the San Francisco Bay Area, as the foreign commerce outside the San Francisco Bay system is a rather small part of the total commerce of the San Francisco Customs District. Import and export for 1960 and 1968, and tonnage movements for 1961 and 1968 between the San Francisco Customs District and foreign countries are presented on Table 4. In 1968, Japan was a most significant trading partner. Exports to Japan accounted for 32% of the total value of all exports and 62% of export tonnage. Japan accounted for 41% of the total value of imports, but only about 10% of total import tonnage.

(2) 1970 Origin and Destination Tonnage. Tonnage of all ocean

commerce for 1970 is summarized for the San Francisco Bay Area in Table 5. It is divided into foreign and coastwise commerce and shows the country or area from (or to) which the tonnages of various commodity groups originate or are destined. Data on the actual point of origin and final destination is not readily obtainable. The Far East, comprising Japan, Korea, Taiwan, and Hong Kong received the largest percentage of export trade, with about 72% of the total exports. The Far East was followed by European countries, which accounted for about 14% of total exports. The Asian countries dominated the import trade accounting for some 47% of the total; Central and South American countries were next with about 21%. In the coastwise trade, shipments to the Pacific Northwest ports accounted for about 41% of the total, followed by Hawaii with 24%. In the area of coastwise receipts, Southern California accounted for about 52% of the total, followed by Alaska with 31%. These movements reflect the importance of petroleum.

(3) Internal Commerce, 1970. Since all the internal commerce either originates or terminates at some point in the San Francisco Bay system, no summary tabulation was prepared for this group. Considerable detail on commodity shipments at internal ports are shown for the individual harbors or projects.



Table 1  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM  
(Thousands of short tons)

| Commodity Group              | 1950       | 1955       | 1960       | 1965       | 1970         |
|------------------------------|------------|------------|------------|------------|--------------|
| <u>Foreign Exports</u>       |            |            |            |            |              |
| <u>Agricultural Products</u> |            |            |            |            |              |
| Food products                | 456        | 902        | 690        | 1,250      | 1,142        |
| Farm products                | <u>149</u> | <u>205</u> | <u>469</u> | <u>487</u> | <u>458</u>   |
| Subtotal                     | 605        | 1,107      | 1,159      | 1,737      | 1,600        |
| <u>Chemical Products</u>     |            |            |            |            |              |
| Chemicals                    | 106        | 138        | 145        | 226        | 170          |
| Salt                         | <u>0</u>   | <u>93</u>  | <u>361</u> | <u>401</u> | <u>194</u>   |
| Subtotal                     | 106        | 231        | 506        | 627        | 364          |
| <u>Petroleum Products</u>    |            |            |            |            |              |
| *Petroleum products          | 491        | 1,002      | 1,205      | 1,189      | 1,745        |
| Crude petroleum              | <u>248</u> | <u>29</u>  | <u>41</u>  | <u>32</u>  | <u>53</u>    |
| Subtotal                     | 739        | 1,031      | 1,246      | 1,221      | 1,798        |
| <u>Metal Products</u>        |            |            |            |            |              |
| Iron and steel scrap         | 0          | 237        | 424        | 504        | 725          |
| Primary metals               | 13         | 12         | 20         | 54         | 47           |
| Metallic ores                | 84         | 288        | 797        | 1,143      | 476          |
| Nonferrous ores              | <u>0</u>   | <u>16</u>  | <u>3</u>   | <u>0</u>   | <u>77</u>    |
| Subtotal                     | 97         | 553        | 1,244      | 1,701      | 1,325        |
| <u>Non-Metallic Minerals</u> |            |            |            |            |              |
|                              | 194        | 48         | 64         | 15         | 26           |
| <u>Department of Defense</u> |            |            |            |            |              |
| <u>Controlled Cargo</u>      | 346        | 136        | 73         | 95         | 21           |
| <u>Miscellaneous</u>         |            |            |            |            |              |
|                              | <u>281</u> | <u>259</u> | <u>421</u> | <u>490</u> | <u>1,459</u> |
| TOTAL, FOREIGN EXPORTS       | 2,368      | 3,365      | 4,713      | 5,886      | 6,593        |

\*Includes petroleum coke.

Table 1  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM  
(Thousands of short tons)

| Commodity Group              | 1950  | 1955  | 1960   | 1965   | 1970   |
|------------------------------|-------|-------|--------|--------|--------|
| <u>Foreign Imports</u>       |       |       |        |        |        |
| <u>Agricultural Products</u> |       |       |        |        |        |
| Food products                | 336   | 315   | 351    | 160    | 438    |
| Farm products                | 218   | 272   | 288    | 463    | 203    |
| Sugar                        | 56    | 0     | 17     | 22     | 106    |
| Subtotal                     | 610   | 587   | 656    | 645    | 747    |
| <u>Chemical Products</u>     |       |       |        |        |        |
| Chemicals                    | 15    | 9     | 3      | 6      | 25     |
| Gypsum and plaster           | 0     | 80    | 246    | 302    | 280    |
| Subtotal                     | 15    | 89    | 249    | 308    | 305    |
| <u>Petroleum Products</u>    |       |       |        |        |        |
| Petroleum products           | 0     | 41    | 601    | 980    | 347    |
| Crude petroleum              | 94    | 2,350 | 4,178  | 3,395  | 3,219  |
| Subtotal                     | 94    | 2,391 | 4,779  | 4,375  | 3,566  |
| <u>Metal Products</u>        |       |       |        |        |        |
| Iron and steel scrap         | 10    | 0     | 0      | 0      | 0      |
| Primary metals               | 13    | 8     | 106    | 157    | 393    |
| Metallic ores                | 85    | 152   | 182    | 83     | 6      |
| Nonferrous ores              | 48    | 89    | 100    | 35     | 89     |
| Subtotal                     | 156   | 249   | 388    | 275    | 488    |
| <u>Lumber Products</u>       |       |       |        |        |        |
| Pulp and paper products      | 86    | 143   | 437    | 651    | 322    |
| <u>Miscellaneous</u>         | 72    | 238   | 292    | 646    | 826    |
| TOTAL, FOREIGN IMPORTS       | 1,033 | 3,697 | 6,801  | 6,900  | 6,254  |
| TOTAL, FOREIGN COMMERCE      | 3,401 | 7,062 | 11,514 | 12,786 | 12,847 |

Table 1  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM  
(Thousands of short tons)

| Commodity Group              | 1950       | 1955       | 1960       | 1965       | 1970       |
|------------------------------|------------|------------|------------|------------|------------|
| <u>Coastwise Shipments</u>   |            |            |            |            |            |
| <u>Agricultural Products</u> |            |            |            |            |            |
| Food products                | 611        | 719        | 528        | 426        | 314        |
| Farm products                | <u>54</u>  | <u>57</u>  | <u>53</u>  | <u>126</u> | <u>234</u> |
| Subtotal                     | 665        | 776        | 581        | 552        | 548        |
| <u>Chemical Products</u>     |            |            |            |            |            |
| Chemicals                    | 14         | 112        | 162        | 329        | 168        |
| Salt                         | <u>0</u>   | <u>348</u> | <u>87</u>  | <u>111</u> | <u>180</u> |
| Subtotal                     | 14         | 460        | 249        | 440        | 348        |
| <u>Petroleum Products</u>    |            |            |            |            |            |
| Petroleum products           | 7,993      | 9,255      | 8,442      | 6,298      | 7,971      |
| Crude petroleum              | <u>13</u>  | <u>27</u>  | <u>125</u> | <u>160</u> | <u>26</u>  |
| Subtotal                     | 8,006      | 9,282      | 8,567      | 6,458      | 7,997      |
| <u>Metal Products</u>        |            |            |            |            |            |
| Iron and steel scrap         | 0          | 1          | 0          | 0          | 0          |
| Primary metals               | 18         | 15         | 14         | 14         | 0          |
| Nonferrous ores              | <u>2</u>   | <u>14</u>  | <u>13</u>  | <u>0</u>   | <u>0</u>   |
| Subtotal                     | 20         | 30         | 27         | 14         | 0          |
| <u>Non-Metallic Minerals</u> |            |            |            |            |            |
|                              | 170        | 18         | 10         | 0          | 1          |
| <u>Lumber Products</u>       |            |            |            |            |            |
| Pulp and paper products      | 5          | 15         | 6          | 28         | 26         |
| <u>Building Cement</u>       |            |            |            |            |            |
|                              | 274        | 465        | 547        | 210        | 472        |
| <u>Machinery</u>             |            |            |            |            |            |
|                              | 10         | 24         | 34         | 48         | 60         |
| <u>Miscellaneous</u>         |            |            |            |            |            |
|                              | <u>202</u> | <u>435</u> | <u>453</u> | <u>370</u> | <u>556</u> |
| TOTAL, COASTWISE SHIPMENTS   | 9,366      | 11,505     | 10,474     | 8,120      | 10,008     |



Table 1  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM  
(Thousands of short tons)

| Commodity Group              | 1950   | 1955   | 1960   | 1965   | 1970   |
|------------------------------|--------|--------|--------|--------|--------|
| <u>Coastwise Receipts</u>    |        |        |        |        |        |
| <u>Agricultural Products</u> |        |        |        |        |        |
| Food products                | 159    | 217    | 209    | 315    | 421    |
| Sugar                        | 486    | 696    | 689    | 724    | 645    |
| Molasses                     | 0      | 38     | 11     | 121    | 49     |
| Subtotal                     | 645    | 951    | 909    | 1,160  | 1,115  |
| <u>Chemical Products</u>     |        |        |        |        |        |
| Chemicals                    | 12     | 123    | 280    | 352    | 477    |
| <u>Petroleum Products</u>    |        |        |        |        |        |
| Petroleum products           | 2,570  | 3,431  | 4,501  | 5,314  | 3,188  |
| Crude petroleum              | 7,368  | 6,567  | 5,539  | 4,859  | 11,695 |
| Subtotal                     | 9,938  | 9,998  | 10,040 | 10,173 | 14,883 |
| <u>Metal Products</u>        |        |        |        |        |        |
| Primary metals               | 273    | 258    | 404    | 199    | 25     |
| <u>Lumber Products</u>       |        |        |        |        |        |
| Lumber and wood products     | 0      | 0      | 49     | 68     | 30     |
| Pulp and paper products      | 46     | 49     | 11     | 0      | 0      |
| Subtotal                     | 46     | 49     | 60     | 68     | 30     |
| <u>Building Cement</u>       |        |        |        |        |        |
|                              | 0      | 0      | 0      | 7      | 0      |
| <u>Miscellaneous</u>         |        |        |        |        |        |
|                              | 251    | 292    | 314    | 122    | 257    |
| TOTAL, COASTWISE RECEIPTS    | 11,165 | 11,671 | 12,007 | 12,081 | 16,787 |
| TOTAL, COASTWISE COMMERCE    | 20,531 | 23,176 | 22,481 | 20,201 | 26,795 |
| TOTAL, OCEAN COMMERCE        | 23,932 | 30,238 | 33,995 | 32,987 | 39,642 |

Table 1  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM  
(Thousands of short tons)

| Commodity Group              | 1950  | 1955  | 1960  | 1965  | 1970              |
|------------------------------|-------|-------|-------|-------|-------------------|
| <u>Internal Shipments</u>    |       |       |       |       |                   |
| <u>Agricultural Products</u> |       |       |       |       |                   |
| Food products                | 33    | 8     | 8     | 15    | 89                |
| Farm products                | 252   | 219   | 218   | 140   | 44                |
| Sugar                        | 253   | 260   | 263   | 290   | 201               |
| Molasses                     | 0     | 38    | 0     | 41    | 60                |
| Subtotal                     | 538   | 525   | 489   | 486   | 394               |
| <u>Petroleum Products</u>    | 5,390 | 6,955 | 7,091 | 8,353 | 4,900             |
| <u>Building Cement</u>       | 0     | 0     | 175   | 166   | 75                |
| <u>Sand and Gravel</u>       | 228   | 146   | 90    | 89    | 231 <sup>1/</sup> |
| <u>Miscellaneous</u>         | 269   | 120   | 71    | 76    | 994               |
| TOTAL, INTERNAL SHIPMENTS    | 6,425 | 7,746 | 7,916 | 9,170 | 6,594             |
| <u>Internal Receipts</u>     |       |       |       |       |                   |
| <u>Agricultural Products</u> |       |       |       |       |                   |
| Food products                | 232   | 59    | 34    | 114   | 84                |
| Molasses                     | 0     | 17    | 0     | 76    | 156               |
| Sugar                        | 141   | 151   | 154   | 176   | 126               |
| Subtotal                     | 373   | 227   | 188   | 366   | 366               |
| <u>Chemicals</u>             | 1     | 0     | 0     | 136   | 193               |

\* See footnotes at end of table.

Continued

Table 1  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM  
(Thousands of short tons)

| Commodity Group                                 | 1950       | 1955       | 1960       | 1965       | 1970              |
|-------------------------------------------------|------------|------------|------------|------------|-------------------|
| Internal Receipts                               |            |            |            |            |                   |
| <u>Petroleum Products</u>                       |            |            |            |            |                   |
| Petroleum products                              | 4,889      | 6,136      | 6,242      | 7,471      | 4,622             |
| Crude petroleum                                 | <u>0</u>   | <u>0</u>   | <u>425</u> | <u>370</u> | <u>247</u>        |
| Subtotal                                        | 4,889      | 6,136      | 6,667      | 7,841      | 4,869             |
| <u>Non-Metallic Ores</u>                        | 157        | 65         | 162        | 375        | 23                |
| <u>Building Cement</u>                          | 0          | 0          | 175        | 165        | 75                |
| <u>Stone, Clay, Glass</u>                       | 14         | 12         | 5          | 10         | 0                 |
| <u>Sand, Gravel, Rock</u>                       | 279        | 437        | 300        | 38         | 749 <sup>2/</sup> |
| <u>Marine Shells</u>                            | 1,094      | 1,295      | 1,365      | 1,494      | 901               |
| <u>Miscellaneous</u>                            | <u>235</u> | <u>238</u> | <u>217</u> | <u>217</u> | <u>84</u>         |
| TOTAL, INTERNAL RECEIPTS                        | 7,042      | 8,410      | 9,079      | 10,642     | 7,260             |
| TOTAL, INTERNAL TRAFFIC                         | 13,467     | 16,156     | 16,995     | 19,812     | 13,854            |
| TOTAL, ALL TRAFFIC,<br>(UNADJUSTED)             | 37,399     | 49,394     | 50,990     | 52,799     | 53,496            |
| TOTAL, ALL TRAFFIC,<br>(ADJUSTED) <sup>3/</sup> | 30,666     | 38,316     | 42,493     | 42,893     | 46,569            |

<sup>1/</sup> Excludes 2,717,000 tons of sand used for freeway fill on Interstate Highway 5.

<sup>2/</sup> Excludes 2,814,000 tons of sand used for freeway fill on Interstate Highway 5.

<sup>3/</sup> Adjusted to net volume by excluding one-half of the internal traffic moved between ports and waterways of the San Francisco Bay Harbor System.



Table 2  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars  
SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

| Commodity Group              | 1950      | 1955      | 1960      | 1965      | 1970      |
|------------------------------|-----------|-----------|-----------|-----------|-----------|
| <u>Foreign Exports</u>       |           |           |           |           |           |
| <u>Agricultural Products</u> |           |           |           |           |           |
| Food products                | \$ 67,741 | \$138,670 | \$160,334 | \$268,021 | \$296,439 |
| Farm products                | 42,105    | 47,527    | 146,553   | 67,632    | 84,261    |
| Subtotal                     | \$109,846 | \$186,197 | \$306,887 | \$335,653 | \$380,700 |
| <u>Chemical Products</u>     |           |           |           |           |           |
| Chemicals                    | \$ 25,484 | \$ 32,492 | \$ 51,479 | \$ 52,912 | \$104,658 |
| Salt                         | 0         | 508       | 1,558     | 1,686     | 819       |
| Subtotal                     | \$ 25,484 | \$ 33,000 | \$ 53,037 | \$ 54,598 | \$105,477 |
| <u>Petroleum Products</u>    |           |           |           |           |           |
| *Petroleum products          | \$ 13,297 | \$ 22,109 | \$ 33,161 | \$ 25,770 | \$ 32,838 |
| Crude petroleum              | 15,153    | 417       | 434       | 493       | 872       |
| Subtotal                     | \$ 28,450 | \$ 22,526 | \$ 33,595 | \$ 26,263 | \$ 33,710 |
| <u>Metal Products</u>        |           |           |           |           |           |
| Iron and steel scrap         | \$ 0      | \$ 8,503  | \$ 14,859 | \$ 18,783 | \$ 36,183 |
| Primary metals               | 2,316     | 2,352     | 4,083     | 7,137     | 8,088     |
| Metallic ores                | 33,755    | 3,763     | 11,912    | 13,197    | 9,791     |
| Nonferrous ores              | 0         | 0         | 641       | 0         | 9,953     |
| Subtotal                     | \$ 36,071 | \$ 14,618 | \$ 31,495 | \$ 39,117 | \$ 64,015 |
| <u>Non-Metallic Minerals</u> |           |           |           |           |           |
|                              | \$ 9,751  | \$ 712    | \$ 5,273  | \$ 180    | \$ 3,715  |
| <u>Department of Defense</u> |           |           |           |           |           |
| Controlled Cargo             | N/A       | N/A       | N/A       | N/A       | N/A       |
| <u>Miscellaneous</u>         |           |           |           |           |           |
|                              | \$ 51,236 | \$158,081 | \$193,725 | \$405,533 | \$818,888 |
| Total, Foreign Exports       | \$260,838 | \$415,134 | \$624,012 | \$861,344 | 1,406,505 |

\* Includes petroleum coke.

Table 2  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

| Commodity Group              | 1950       | 1955      | 1960      | 1965      | 1970      |
|------------------------------|------------|-----------|-----------|-----------|-----------|
| <b>Foreign Imports</b>       |            |           |           |           |           |
| <u>Agricultural Products</u> |            |           |           |           |           |
| Food products                | \$161,593  | \$190,142 | \$165,165 | \$263,002 | \$286,742 |
| Farm products                | 67,801     | 25,920    | 82,511    | 47,390    | 38,829    |
| Sugar                        | 35         | 0         | 1,754     | 1,182     | 16,255    |
| Subtotal                     | \$229,429  | \$216,062 | \$249,430 | \$311,574 | \$341,826 |
| <u>Chemical Products</u>     |            |           |           |           |           |
| Chemicals                    | \$ 1,146   | \$ 440    | \$ 285    | \$ 1,477  | \$ 58,017 |
| Gypsum and plaster           | 0          | 74        | 225       | 344       | 322       |
| Subtotal                     | \$ 1,146   | \$ 514    | \$ 510    | \$ 1,821  | \$ 58,339 |
| <u>Petroleum Products</u>    |            |           |           |           |           |
| Petroleum products           | \$ 0       | \$ 588    | \$ 8,611  | \$ 9,776  | \$ 6,262  |
| Crude petroleum              | 69         | 33,728    | 49,050    | 45,663    | 42,328    |
| Subtotal                     | \$ 69      | \$ 34,316 | \$ 57,661 | \$ 55,439 | \$ 48,590 |
| <u>Metal Products</u>        |            |           |           |           |           |
| Iron and steel scrap         | \$ 1       | \$ 0      | \$ 0      | \$ 0      | \$ 0      |
| Primary metals               | 906        | 1,663     | 2,565     | 18,684    | 57,940    |
| Metallic ores                | 9,906      | 6,297     | 13,500    | 8,939     | 8,185     |
| Nonferrous ores              | 5,029      | 2,492     | 5,821     | 4,265     | 9,197     |
| Subtotal                     | \$ 15,842  | \$ 10,452 | \$ 21,886 | \$ 31,888 | \$ 75,322 |
| <u>Lumber Products</u>       |            |           |           |           |           |
| Pulp and paper products      | \$ 7,810   | \$ 16,575 | \$ 27,978 | \$ 21,196 | \$ 41,841 |
| <u>Miscellaneous</u>         | \$ 38,984  | \$ 77,096 | \$185,138 | \$361,006 | \$827,610 |
| Total, Foreign Imports       | \$293, 280 | \$355,015 | \$542,603 | \$782,924 | 1,393,528 |
| Total, Foreign Commerce      | \$554,118  | \$770,149 | 1,166,615 | 1,644,268 | 2,800,033 |

Table 3  
Categories of Commodity Movement, 1960, 1965, and 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

| Harbor or Project<br>Area | Categories of Commodity Movement, 1,000 Tons |         |                   |         |                  |         |                               |         |                |  |
|---------------------------|----------------------------------------------|---------|-------------------|---------|------------------|---------|-------------------------------|---------|----------------|--|
|                           | Petroleum &<br>Liquid Bulk                   |         | Dry Bulk<br>Cargo |         | General<br>Cargo |         | Containerized<br>& LASH Cargo |         | Total<br>Cargo |  |
|                           | Tonnage                                      | % Total | Tonnage           | % Total | Tonnage          | % Total | Tonnage                       | % Total |                |  |
|                           |                                              |         |                   |         |                  |         |                               |         |                |  |
| Ocean Commerce            |                                              |         |                   |         | 1960             |         |                               |         |                |  |
| 1. San Francisco          | 178                                          | 7.4     | 395               | 16.5    | 1,827            | 76.1    | 0                             | 0       | 2,400          |  |
| 2. Redwood City           | 0                                            | 0       | 1,088             | 95.4    | 53               | 4.6     | 0                             | 0       | 1,141          |  |
| 3. Oakland                | 807                                          | 29.0    | 311               | 11.2    | 1,660            | 59.8    | 0                             | 0       | 2,778          |  |
| 4. Richmond               | 13,373                                       | 97.5    | 207               | 1.5     | 143              | 1.0     | 0                             | 0       | 13,723         |  |
| 5. San Pablo/M. I.        | 1,812                                        | 99.3    | 0                 | 0       | 13               | 0.7     | 0                             | 0       | 1,825          |  |
| 6. Carquinez              | 4,898                                        | 85.2    | 822               | 14.3    | 28               | 0.5     | 0                             | 0       | 5,748          |  |
| 7. Suisun                 | 3,293                                        | 98.9    | 0                 | 0       | 38               | 1.1     | 0                             | 0       | 3,331          |  |
| 8. Lower San Joaquin      | 602                                          | 76.3    | 153               | 19.4    | 34               | 4.3     | 0                             | 0       | 789            |  |
| 9. Stockton               | 247                                          | 10.9    | 1,391             | 61.6    | 622              | 27.5    | 0                             | 0       | 2,260          |  |
| 10. Sacramento            | No ocean commerce in 1960                    |         |                   |         |                  |         |                               |         |                |  |
| Subtotal                  | 25,210                                       | 74.2    | 4,367             | 12.8    | 4,418            | 13.0    | 0                             | 0       | 33,995         |  |
| Internal Traffic          |                                              |         |                   |         |                  |         |                               |         |                |  |
| 1. San Francisco          | 1,890                                        | 96.5    | 2                 | 0.1     | 66               | 3.4     | 0                             | 0       | 1,958          |  |
| 2. Redwood City           | 540                                          | 25.8    | 1,540             | 73.6    | 13               | 0.6     | 0                             | 0       | 2,093          |  |
| 3. Oakland                | 1,196                                        | 81.3    | 246               | 16.7    | 30               | 2.0     | 0                             | 0       | 1,472          |  |
| 4. Richmond               | 3,287                                        | 92.9    | 78                | 2.2     | 173              | 4.9     | 0                             | 0       | 3,538          |  |
| 5. San Pablo/M. I.        | 731                                          | 91.7    | 0                 | 0       | 56               | 8.3     | 0                             | 0       | 797            |  |
| 6. Carquinez              | 2,192                                        | 89.1    | 0                 | 0       | 267              | 10.0    | 0                             | 0       | 2,459          |  |
| 7. Suisun                 | 1,335                                        | 94.0    | 84                | 5.9     | 1                | 0.1     | 0                             | 0       | 1,420          |  |
| 8. Lower San Joaquin      | 177                                          | 82.7    | 31                | 14.5    | 6                | 2.8     | 0                             | 0       | 214            |  |
| 9. Stockton               | 931                                          | 88.5    | 0                 | 0       | 121              | 11.5    | 0                             | 0       | 1,052          |  |
| 10. Sacramento            | 1,479                                        | 74.2    | 504               | 25.3    | 9                | 0.5     | 0                             | 0       | 1,992          |  |
| Subtotal                  | 13,758                                       | 81.0    | 2,485             | 14.6    | 752              | 4.4     | 0                             | 0       | 16,995         |  |
| TOTAL TRAFFIC             | 38,968                                       | 76.4    | 6,852             | 13.4    | 5,170            | 10.2    | 0                             | 0       | 50,990         |  |



Table 3  
Categories of Commodity Movement, 1960, 1965, and 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

| Harbor or Project<br>Area | Categories of Commodity Movement, 1,000 Tons |         |                   |         |                  |         |                               |         |                |         |
|---------------------------|----------------------------------------------|---------|-------------------|---------|------------------|---------|-------------------------------|---------|----------------|---------|
|                           | Petroleum &<br>Liquid Bulk                   |         | Dry Bulk<br>Cargo |         | General<br>Cargo |         | Containerized<br>& LASH Cargo |         | Total<br>Cargo |         |
|                           | Tonnage                                      | % Total | Tonnage           | % Total | Tonnage          | % Total | Tonnage                       | % Total | Tonnage        | % Total |
| Ocean Commerce            |                                              |         |                   |         |                  |         |                               |         |                |         |
|                           | 1965                                         |         |                   |         |                  |         |                               |         |                |         |
| 1. San Francisco          | 202                                          | 8.6     | 395               | 16.7    | 1,763            | 74.7    | N                             | 0       | 2,360          |         |
| 2. Redwood City           | 0                                            | 0       | 797               | 90.2    | 87               | 9.8     | 0                             | 0       | 884            |         |
| 3. Oakland                | 861                                          | 24.6    | 393               | 11.7    | 1,844            | 54.8    | 300                           | 8.9     | 3,398          |         |
| 4. Richmond               | 11,025                                       | 96.4    | 241               | 2.1     | 167              | 1.5     | 0                             | 0       | 11,433         |         |
| 5. San Pablo/M. I.        | 1,973                                        | 99.5    | 0                 | 0       | 9                | .5      | 0                             | 0       | 1,982          |         |
| 6. Carquinez              | 6,351                                        | 88.7    | 768               | 10.7    | 46               | .6      | 0                             | 0       | 7,165          |         |
| 7. Suisun                 | 1,412                                        | 93.0    | 0                 | 0       | 106              | 7.0     | 0                             | 0       | 1,518          |         |
| 8. Lower San Joaquin      | 624                                          | 35.5    | 1,076             | 61.2    | 58               | 3.3     | 0                             | 0       | 1,758          |         |
| 9. Stockton               | 276                                          | 13.5    | 1,393             | 68.3    | 353              | 17.3    | 18                            | .9      | 2,040          |         |
| 10. Sacramento            | 0                                            | 0       | 419               | 93.3    | 30               | 6.7     | 0                             | 0       | 449            |         |
| Subtotal                  | 22,724                                       | 68.9    | 5,482             | 16.6    | 4,463            | 13.5    | 318                           | 1.0     | 32,987         |         |
| Internal Traffic          |                                              |         |                   |         |                  |         |                               |         |                |         |
| 1. San Francisco          | 2,343                                        | 89.2    | 231               | 8.8     | 52               | 2.0     | 0                             | 0       | 2,626          |         |
| 2. Redwood City           | 930                                          | 35.9    | 1,660             | 64.0    | 4                | .1      | 0                             | 0       | 2,594          |         |
| 3. Oakland                | 1,395                                        | 84.4    | 144               | 8.7     | 114              | 6.9     | 0                             | 0       | 1,653          |         |
| 4. Richmond               | 3,710                                        | 93.7    | 52                | 1.3     | 199              | 5.0     | 0                             | 0       | 3,961          |         |
| 5. San Pablo/M. I.        | 911                                          | 98.3    | 0                 | 0       | 16               | 1.7     | 0                             | 0       | 927            |         |
| 6. Carquinez              | 3,211                                        | 90.5    | 0                 | 0       | 339              | 9.5     | 0                             | 0       | 3,550          |         |
| 7. Suisun                 | 1,342                                        | 93.7    | 88                | 6.1     | 3                | .2      | 0                             | 0       | 1,433          |         |
| 8. Lower San Joaquin      | 103                                          | 39.5    | 135               | 51.7    | 23               | 8.8     | 0                             | 0       | 261            |         |
| 9. Stockton               | 785                                          | 98.6    | 0                 | 0       | 11               | 1.4     | 0                             | 0       | 796            |         |
| 10. Sacramento            | 1,606                                        | 79.9    | 345               | 17.1    | 60               | 3.0     | 0                             | 0       | 2,011          |         |
| Subtotal                  | 16,336                                       | 82.5    | 2,655             | 13.4    | 821              | 4.1     | 0                             | 0       | 19,812         |         |
| TOTAL TRAFFIC             | 39,060                                       | 74.0    | 8,137             | 15.4    | 5,284            | 10.0    | 318                           | 0.6     | 52,799         |         |

N = Negligible

Table 3  
Categories of Commodity Movement, 1960, 1965, and 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

| Harbor or Project Area | Categories of Commodity Movement, 1,000 Tons |         |                |         |               |         |                            |         |                      |         |
|------------------------|----------------------------------------------|---------|----------------|---------|---------------|---------|----------------------------|---------|----------------------|---------|
|                        | Petroleum & Liquid Bulk                      |         | Dry Bulk Cargo |         | General Cargo |         | Containerized & LASH Cargo |         | Total Cargo          |         |
|                        | Tonnage                                      | % Total | Tonnage        | % Total | Tonnage       | % Total | Tonnage                    | % Total | Tonnage              | % Total |
|                        |                                              |         |                |         |               |         |                            |         |                      |         |
| Ocean Commerce         |                                              |         |                |         | 1970          |         |                            |         |                      |         |
| 1. San Francisco       | 93                                           | 4.8     | 191            | 9.9     | 1,257         | 65.5    | 379                        | 19.8    | 1,920                |         |
| 2. Redwood City        | 72                                           | 6.8     | 930            | 88.2    | 53            | 5.0     | 0                          | 0       | 1,055                |         |
| 3. Oakland             | 441                                          | 11.0    | 476            | 11.9    | 1,891         | 47.2    | 1,200                      | 29.9    | 4,008                |         |
| 4. Richmond            | 10,276                                       | 92.4    | 421            | 3.8     | 419           | 3.8     | 0                          | 0       | 11,116               |         |
| 5. San Pablo/M. I.     | 4,444                                        | 99.9    | 0              | 0       | 5             | 0.1     | 0                          | 0       | 4,449                |         |
| 6. Carquinez           | 10,879                                       | 93.0    | 776            | 6.6     | 51            | 0.4     | 0                          | 0       | 11,706               |         |
| 7. Suisun              | 1,478                                        | 99.8    | 0              | 0       | 3             | .2      | 0                          | 0       | 1,481                |         |
| 8. Lower San Joaquin   | 251                                          | 18.8    | 1,039          | 77.9    | 44            | 3.3     | 0                          | 0       | 1,334                |         |
| 9. Stockton            | 47                                           | 3.3     | 1,178          | 82.4    | 164           | 11.5    | 40                         | 2.8     | 1,429                |         |
| 10. Sacramento         | 0                                            | 0       | 518            | 45.3    | 625           | 54.6    | 1                          | .1      | 1,144                |         |
| Subtotal               | 27,981                                       | 70.6    | 5,529          | 14.0    | 4,512         | 11.3    | 1,620                      | 4.1     | 39,642               |         |
| Internal Traffic       |                                              |         |                |         |               |         |                            |         |                      |         |
| 1. San Francisco       | 1,802                                        | 98.9    | 11             | 0.6     | 9             | 0.5     | N                          | 0       | 1,822                |         |
| 2. Redwood City        | 137                                          | 12.2    | 976            | 86.5    | 15            | 1.3     | 0                          | 0       | 1,128                |         |
| 3. Oakland             | 1,187                                        | 47.0    | 1,254          | 49.6    | 85            | 3.4     | 0                          | 0       | 2,526                |         |
| 4. Richmond            | 2,733                                        | 86.1    | 308            | 9.7     | 134           | 4.2     | 0                          | 0       | 3,175                |         |
| 5. San Pablo/M. I.     | 634                                          | 99.9    | 0              | 0       | 1             | 0.1     | 0                          | 0       | 635                  |         |
| 6. Carquinez           | 2,011                                        | 88.1    | 0              | 0       | 272           | 11.9    | 0                          | 0       | 2,283                |         |
| 7. Suisun              | 659                                          | 75.0    | 207            | 23.5    | 13            | 1.5     | 0                          | 0       | 879                  |         |
| 8. Lower San Joaquin   | 265                                          | 55.6    | 210            | 44.0    | 2             | .4      | 0                          | 0       | 477                  |         |
| 9. Stockton            | 471                                          | 94.2    | 0              | 0       | 29            | 5.8     | 0                          | 0       | 500                  |         |
| 10. Sacramento         | 188                                          | 43.8    | 240            | 56.0    | 1             | .2      | 0                          | 0       | 429                  |         |
| Subtotal               | 10,087                                       | 72.8    | 3,206          | 23.1    | 561           | 4.1     | 0                          | 0       | 13,854 <sup>1/</sup> |         |
| TOTAL TRAFFIC          | 38,068                                       | 71.2    | 8,735          | 16.3    | 5,073         | 9.5     | 1,620                      | 3.0     | 53,496               |         |

N = Negligible

<sup>1/</sup> Excludes 5,531,000 tons of sand used for freeway fill on Interstate Highway 5.

TABLE 4  
Foreign Trade  
SAN FRANCISCO CUSTOMS DISTRICT <sup>a/</sup>

|                           | Value               |         | 1968       |              | Tonnage      |            | 1968   |              | Growth Rates <sup>b/</sup> |         |
|---------------------------|---------------------|---------|------------|--------------|--------------|------------|--------|--------------|----------------------------|---------|
|                           | Millions of Dollars | 1960    | Percent of | 1961         | 1968         | Percent of | 1968   | Percent/Year | Value                      | Tonnage |
|                           |                     |         | \$ Value   | (1,000 tons) | (1,000 tons) | Tonnage, % |        |              |                            |         |
| <b>IMPORTS</b>            |                     |         |            |              |              |            |        |              |                            |         |
| Developed Countries       |                     |         |            |              |              |            |        |              |                            |         |
| Italy                     | 9.0                 | 18.6    | 1.7        | 13.3         | 22.5         | .4         | 9.5    | 7.9          |                            |         |
| West Germany              | 28.0                | 88.1    | 7.9        | 44.8         | 71.7         | 1.2        | 15.5   | 7.0          |                            |         |
| Austria                   | .7                  | 1.8     | .2         | .3           | .8           | -          | 12.8   | 15.0         |                            |         |
| Denmark                   | 2.8                 | 5.5     | .5         | 4.3          | 7.2          | .1         | 8.8    | 5.3          |                            |         |
| Finland                   | .5                  | 1.9     | .2         | 5.3          | 12.8         | .2         | 18.2   | 12.6         |                            |         |
| Norway                    | 1.7                 | 2.7     | .2         | 16.2         | 23.4         | .4         | 6.0    | 5.5          |                            |         |
| Sweden                    | 6.1                 | 12.9    | 1.1        | 5.6          | 10.6         | .2         | 9.9    | 9.5          |                            |         |
| U.K. & No. Ireland        | 47.1                | 67.8    | 6.1        | 35.3         | 48.0         | .8         | 4.7    | 4.5          |                            |         |
| Australia                 | 13.1                | 22.8    | 2.0        | 61.2         | 94.4         | 1.6        | 7.2    | 6.3          |                            |         |
| Canada                    | 26.5                | 32.8    | 2.9        | 301.8        | 408.7        | 6.7        | 2.7    | 4.4          |                            |         |
| Japan                     | 133.6               | 458.7   | 41.0       | 340.4        | 641.3        | 10.5       | 17.0   | 9.4          |                            |         |
| New Zealand & W. Samoa    | 5.8                 | 12.4    | 1.1        | 13.6         | 16.9         | .3         | 10.0   | 3.5          |                            |         |
| Other Developed Countries | 2.2                 | 5.3     | .5         | 77.1         | 72.4         | 1.2        | 11.6   | (0.9)        |                            |         |
| Subtotal                  | 277.1               | 731.3   | 65.4       | 919.2        | 1,430.7      | 23.6       | 12.9   | 6.5          |                            |         |
| Less Developed Countries  |                     |         |            |              |              |            |        |              |                            |         |
| Latin America, F.T.A.     | 90.3                | 116.3   | 10.4       | 1,563.8      | 2,189.8      | 36.0       | 3.2    | 6.6          |                            |         |
| Other Western Hemisphere  | 6.8                 | 8.1     | .7         |              | 404.3        | 6.6        | 2.2    |              |                            |         |
| Africa                    | 11.6                | 41.7    | 3.7        | 51.3         | 68.7         | 1.1        | 17.5   | 4.3          |                            |         |
| Hong Kong                 | 12.4                | 47.5    | 4.2        | 14.6         | 25.5         | .4         | 18.3   | 8.3          |                            |         |
| Malaysia, Singapore       | 4.6                 | 10.8    | 1.0        | 4.4          | 15.1         | .2         | 11.3   | 19.1         |                            |         |
| New Guinea                | .2                  | 4.8     | .4         | .8           | 7.6          | .1         | 48.9   | 38.0         |                            |         |
| Philippines               | 38.3                | 65.5    | 5.9        | 290.1        | 292.8        | 4.8        | 6.9    | 0.1          |                            |         |
| Rep. of Korea             | .2                  | 8.6     | .8         | .8           | 3.7          | .1         | 60.0   | 24.5         |                            |         |
| Taiwan                    | 1.2                 | 23.5    | 2.1        | 8.9          | 28.7         | .5         | 45.2   | 18.4         |                            |         |
| Middle East               | 22.5                | 8.2     | .7         | 1,628.3      | 639.8        | 10.5       | (11.8) | (10.0)       |                            |         |
| Ceylon                    | 2.7                 | .4      | .1         | 1.4          | .7           | -          | (21.3) | ( 9.2)       |                            |         |
| Indonesia                 | 28.1                | 19.9    | 1.8        | 1,435.1      | 895.7        | 14.7       | ( 4.2) | ( 6.1)       |                            |         |
| Subtotal                  | 218.9               | 355.3   | 31.8       | 4,999.5      | 4,572.4      | 75.0       | 6.1    | 1.4          |                            |         |
| Other                     | 46.6                | 31.1    | 2.8        | 18.2         | 84.9         | 1.4        | 5.0    | 24.6         |                            |         |
| TOTAL                     | 542.6               | 1,117.7 | 100.0      | 5,936.9      | 6,088.0      | 100.0      | 9.5    | .3           |                            |         |

\* See footnotes at end of table

Continued



Table 4  
Foreign Trade  
SAN FRANCISCO CUSTOMS DISTRICT<sup>a/</sup>

|                         | Value               |         | 1968       | Tonnage      |              | 1968       | Growth Rates <sup>b/</sup> |         |
|-------------------------|---------------------|---------|------------|--------------|--------------|------------|----------------------------|---------|
|                         | Millions of Dollars |         | Percent of | 1961         | 1968         | Percent of | Percent/Year               |         |
|                         | 1960                | 1968    | \$ Value   | (1,000 tons) | (1,000 tons) | Tonnage, % | Value                      | Tonnage |
| EXPORTS                 |                     |         |            |              |              |            |                            |         |
| Australia               | 31.5                | 88.0    | 8.2        | 62.4         | 85.0         | 1.2        | 13.7                       | 4.4     |
| Japan                   | 174.7               | 342.2   | 32.0       | 2,888.2      | 4,250.6      | 62.1       | 8.8                        | 5.7     |
| Latin America, F.T.A.   | 27.9                | 38.2    | 3.6        | 100.9        | 161.1        | 2.4        | 4.0                        | 7.0     |
| Hong Kong               | 21.0                | 42.3    | 3.9        | 51.8         | 65.2         | 1.0        | 9.2                        | 3.4     |
| Malaysia, Singapore     | 16.3                | 29.9    | 2.8        | 30.0         | 52.1         | .8         | 7.9                        | 8.2     |
| Nansei & Nanpo N.E.C.   | 8.7                 | 25.1    | 2.3        | 35.0         | 95.8         | 1.4        | 14.2                       | 15.8    |
| Philippines             | 45.0                | 77.3    | 7.2        | 114.2        | 100.4        | 1.5        | 14.2                       | (1.9)   |
| South Vietnam           | 14.2                | 35.2    | 3.3        | 37.1         | 94.8         | 1.4        | 12.0                       | 13.7    |
| Taiwan                  | 9.9                 | 27.9    | 2.6        | 84.0         | 55.1         | .8         | 13.9                       | (6.0)   |
| Thailand                | 8.3                 | 39.6    | 3.7        | 14.5         | 75.1         | 1.1        | 21.8                       | 26.4    |
| Pacific Is. Trust Terr. | 1.1                 | 6.2     | .6         | 5.0          | 12.4         | .2         | 24.4                       | 13.8    |
| Canada                  | 9.1                 | 2.6     | .2         | 238.4        | 217.5        | 3.2        | (14.4)                     | (1.3)   |
| E.E.C.                  | 95.2                | 69.6    | 6.5        | 237.0        | 431.3        | 6.3        | ( 3.8)                     | 9.0     |
| Middle East             | 8.9                 | 6.1     | .6         | 135.0        | 10.2         | .1         | ( 5.2)                     | (31.0)  |
| Subtotal                | 471.8               | 830.2   | 77.5       | 4,033.5      | 5,706.6      | 83.5       | 8.4                        | 5.0     |
| Other                   | 152.2               | 240.8   | 22.5       | 720.7        | 1,133.9      | 16.5       | 5.9                        | 6.8     |
| TOTAL                   | 624.0               | 1,071.0 | 100.0      | 4,754.2      | 6,840.5      | 100.0      | 7.0                        | 5.3     |

<sup>a/</sup> Source: Department of Commerce data published by Bank of America, NTSA.

<sup>b/</sup> Value based on 1960-1968; tonnage based on 1961-1968.

Table 5  
Commodity Origins and Destinations, 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

|                                                 | Far East | Canada | Mexico | Central<br>So. America | Europe | Africa | Asia | Australia | Other | Total |
|-------------------------------------------------|----------|--------|--------|------------------------|--------|--------|------|-----------|-------|-------|
| <u>Exports to above countries in 1,000 tons</u> |          |        |        |                        |        |        |      |           |       |       |
| FOREIGN                                         |          |        |        |                        |        |        |      |           |       |       |
| 1. <u>Agricultural Products</u>                 |          |        |        |                        |        |        |      |           |       |       |
| a. Food products                                | 907      |        |        | 40                     | 150    |        | 33   | 12        |       | 1,142 |
| b. Farm products                                | 429      |        |        |                        |        |        | 29   |           |       | 458   |
| Subtotal                                        | 1,336    |        |        | 40                     | 150    |        | 62   | 12        |       | 1,600 |
| 2. <u>Chemical Products</u>                     |          |        |        |                        |        |        |      |           |       |       |
| a. Chemicals                                    | 19       |        | 1      | 41                     | 18     | 59     | 24   | 8         |       | 170   |
| b. Salt                                         | 194      |        |        |                        |        |        |      |           |       | 194   |
| Subtotal                                        | 213      |        | 1      | 41                     | 18     | 59     | 24   | 8         |       | 364   |
| 3. <u>Petroleum Products</u>                    |          |        |        |                        |        |        |      |           |       |       |
| a. Petroleum products                           | 870      | 289    | 18     |                        | 568    |        |      |           |       | 1,745 |
| b. Crude petroleum                              | 53       |        |        |                        |        |        |      |           |       | 53    |
| Subtotal                                        | 923      | 289    | 18     |                        | 568    |        |      |           |       | 1,798 |
| 4. <u>Metal Products</u>                        |          |        |        |                        |        |        |      |           |       |       |
| a. Iron, steel scrap                            | 725      |        |        |                        |        |        |      |           |       | 725   |
| b. Primary metals                               | 40       |        |        |                        | 7      |        |      |           |       | 47    |
| c. Metallic ores                                | 476      |        |        |                        |        |        |      |           |       | 476   |
| d. Nonferrous ores                              |          |        |        |                        | 77     |        |      |           |       | 77    |
| Subtotal                                        | 1,241    |        |        |                        | 84     |        |      |           |       | 1,325 |
| 5. <u>Non-Metallic Minerals</u>                 | 26       |        |        |                        |        |        |      |           |       | 26    |
| 6. <u>Dept. of Defense</u>                      | 21       |        |        |                        |        |        |      |           |       | 21    |
| 7. <u>Miscellaneous</u>                         | 972      | 6      |        | 99                     | 94     |        | 104  | 51        | 133   | 1,459 |
| Total exports                                   | 4,732    | 295    | 19     | 180                    | 914    | 59     | 190  | 71        | 133   | 6,593 |
| Percent                                         | 71.8     | 4.5    | 0.3    | 2.7                    | 13.8   | 0.9    | 2.9  | 1.1       | 2.0   | 100.0 |

Table 5  
Commodity Origins and Destinations, 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

|                                                   |                              | Far East | Canada | Mexico | Central<br>So. America | Europe | Africa | Asia  | Australia | Other | Total  |
|---------------------------------------------------|------------------------------|----------|--------|--------|------------------------|--------|--------|-------|-----------|-------|--------|
| <u>Imports from above countries in 1,000 tons</u> |                              |          |        |        |                        |        |        |       |           |       |        |
| FOREIGN                                           |                              |          |        |        |                        |        |        |       |           |       |        |
| 1.                                                | <u>Agricultural Products</u> |          |        |        |                        |        |        |       |           |       |        |
|                                                   | a. Food products             | 16       |        |        | 168                    | 4      | 45     | 193   | 12        |       | 438    |
|                                                   | b. Farm products             | 52       |        |        | 32                     |        |        | 119   |           |       | 203    |
|                                                   | c. Sugar                     |          |        |        |                        |        |        | 106   |           |       | 106    |
|                                                   | Subtotal                     | 68       |        |        | 200                    | 4      | 45     | 418   | 12        |       | 747    |
| 2.                                                | <u>Chemicals</u>             |          |        |        |                        |        |        |       |           |       |        |
|                                                   | a. Chemicals                 | 22       |        |        |                        | 3      |        |       |           |       | 25     |
|                                                   | b. Gypsum, plaster           | 0        |        | 280    |                        | 0      |        |       |           |       | 280    |
|                                                   | Subtotal                     | 22       |        | 280    |                        | 3      |        |       |           |       | 305    |
| 3.                                                | <u>Petroleum Products</u>    |          |        |        |                        |        |        |       |           |       |        |
|                                                   | a. Petroleum products        | 12       |        |        | 335                    |        |        |       |           |       | 347    |
|                                                   | b. Crude petroleum           | 0        | 141    |        | 652                    |        |        | 2,426 |           |       | 3,219  |
|                                                   | Subtotal                     | 12       | 141    |        | 987                    |        |        | 2,426 |           |       | 3,566  |
| 4.                                                | <u>Metal Products</u>        |          |        |        |                        |        |        |       |           |       |        |
|                                                   | a. Iron & steel scrap        | 0        |        |        |                        |        |        |       |           |       | 0      |
|                                                   | b. Primary metals            | 393      |        |        |                        |        |        |       |           |       | 393    |
|                                                   | c. Metallic ores             |          |        |        | 6                      |        |        |       |           |       | 6      |
|                                                   | d. Nonferrous ores           |          |        |        | 42                     |        |        |       | 47        |       | 89     |
|                                                   | Subtotal                     | 393      |        |        | 48                     |        |        |       | 47        |       | 488    |
| 5.                                                | <u>Lumber Products</u>       |          |        |        |                        |        |        |       |           |       |        |
|                                                   | Pulp, paper                  |          | 322    |        |                        |        |        |       |           |       | 322    |
| 6.                                                | <u>Miscellaneous</u>         | 387      | 26     |        | 65                     | 195    | 21     | 85    | 31        | 16    | 826    |
|                                                   | Total imports                | 882      | 489    | 280    | 1,300                  | 202    | 66     | 2,929 | 90        | 16    | 6,254  |
|                                                   | Percent                      | 14.1     | 7.8    | 4.5    | 20.8                   | 3.2    | 1.1    | 46.9  | 1.4       | 0.2   | 100.0  |
|                                                   | Total foreign                | 5,614    | 784    | 299    | 1,480                  | 1,116  | 125    | 3,119 | 161       | 149   | 12,847 |
|                                                   | Percent                      | 43.7     | 6.1    | 2.3    | 11.5                   | 8.7    | 1.0    | 24.3  | 1.2       | 1.2   | 100.0  |



Table 5  
Commodity Origins and Destinations, 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

|                                               | Southern<br>California | Hawaii     | Northern<br>California | Pacific<br>Northwest | Alaska     | Gulf<br>Coast | Atlantic<br>Coast | Puerto<br>Rico | Total      |
|-----------------------------------------------|------------------------|------------|------------------------|----------------------|------------|---------------|-------------------|----------------|------------|
| <u>Shipments to above areas in 1,000 tons</u> |                        |            |                        |                      |            |               |                   |                |            |
| <u>Coastwise Shipments</u>                    |                        |            |                        |                      |            |               |                   |                |            |
| 1. <u>Agricultural Products</u>               |                        |            |                        |                      |            |               |                   |                |            |
| a. Food products                              |                        | 208        |                        |                      |            |               |                   | 106            | 314        |
| b. Farm products                              |                        | <u>75</u>  |                        |                      |            |               |                   | <u>159</u>     | <u>234</u> |
| Subtotal                                      |                        | 283        |                        |                      |            |               |                   | 265            | 548        |
| 2. <u>Chemical Products</u>                   |                        |            |                        |                      |            |               |                   |                |            |
| a. Chemicals                                  | 2                      | 60         |                        | 3                    |            | 86            | 12                | 5              | 168        |
| b. Salt                                       |                        |            |                        | <u>180</u>           |            |               |                   |                | <u>180</u> |
| Subtotal                                      | <u>2</u>               | <u>60</u>  |                        | 183                  |            | <u>86</u>     | <u>12</u>         | <u>5</u>       | 348        |
| 3. <u>Petroleum Products</u>                  |                        |            |                        |                      |            |               |                   |                |            |
| a. Petroleum products                         | 2,077                  | 1,441      | 110                    | 3,452                | 720        | 120           | 48                | 3              | 7,971      |
| b. Crude petroleum                            | <u>13</u>              | <u>13</u>  |                        |                      |            |               |                   |                | <u>26</u>  |
| Subtotal                                      | 2,090                  | 1,454      | <u>110</u>             | <u>3,452</u>         | <u>720</u> | <u>120</u>    | <u>48</u>         | <u>3</u>       | 7,997      |
| 4. <u>Metal Products</u>                      |                        |            |                        |                      |            |               |                   |                |            |
| a. Iron, steel scrap                          |                        |            |                        |                      |            |               |                   |                | 0          |
| b. Primary metals                             |                        |            |                        |                      |            |               |                   |                | 0          |
| c. Nonferrous ores                            |                        |            |                        |                      |            |               |                   |                | <u>0</u>   |
| Subtotal                                      |                        |            |                        |                      |            |               |                   |                | 0          |
| 5. <u>Non-Metallic Minerals</u>               |                        | 1          |                        |                      |            |               |                   |                | 1          |
| 6. <u>Lumber Products</u>                     |                        |            |                        |                      |            |               |                   |                |            |
| Pulp, paper                                   |                        | 24         |                        |                      |            |               |                   | 2              | 26         |
| 7. <u>Building Cement</u>                     |                        |            |                        | 472                  |            |               |                   |                | 472        |
| 8. <u>Machinery</u>                           |                        | 58         |                        |                      |            |               |                   | 2              | 60         |
| 9. <u>Miscellaneous</u>                       | <u>2</u>               | <u>519</u> |                        |                      |            |               | <u>35</u>         |                | <u>556</u> |
| Total shipments                               | 2,094                  | 2,399      | 110                    | 4,107                | 720        | 206           | 95                | 277            | 10,008     |
| Percent                                       | 20.9                   | 24.0       | 1.1                    | 41.0                 | 7.2        | 2.1           | 1.0               | 2.7            | 100.0      |

Table 5  
Commodity Origins and Destinations, 1970

SUMMARY, SAN FRANCISCO BAY AREA HARBOR SYSTEM

|                                                | Southern<br>California | Hawaii | Northern<br>California | Pacific<br>Northwest | Alaska | Gulf<br>Coast | Atlantic<br>Coast | Puerto<br>Rico | Other | Total  |
|------------------------------------------------|------------------------|--------|------------------------|----------------------|--------|---------------|-------------------|----------------|-------|--------|
| <u>Receipts from above areas in 1,000 tons</u> |                        |        |                        |                      |        |               |                   |                |       |        |
| <u>Coastwise Receipts</u>                      |                        |        |                        |                      |        |               |                   |                |       |        |
| 1. <u>Agricultural Products</u>                |                        |        |                        |                      |        |               |                   |                |       |        |
| a. Food products                               |                        | 403    |                        |                      |        |               |                   | 8              | 10    | 421    |
| b. Sugar                                       |                        | 645    |                        |                      |        |               |                   |                |       | 645    |
| c. Molasses                                    |                        | 49     |                        |                      |        |               |                   |                |       | 49     |
| Subtotal                                       |                        | 1,097  |                        |                      |        |               |                   | 8              | 10    | 1,115  |
| 2. <u>Chemical Products</u>                    |                        |        |                        |                      |        |               |                   |                |       |        |
| Chemical                                       | 80                     | 10     |                        | 8                    |        | 208           | 171               |                |       | 477    |
| 3. <u>Petroleum Products</u>                   |                        |        |                        |                      |        |               |                   |                |       |        |
| a. Petroleum products                          | 2,205                  | 7      |                        | 654                  | 303    | 11            | 8                 |                |       | 3,188  |
| b. Crude petroleum                             | 6,501                  |        |                        | 299                  | 4,895  |               |                   |                |       | 11,695 |
| Subtotal                                       | 8,706                  | 7      |                        | 953                  | 5,198  | 11            | 8                 |                |       | 14,883 |
| 4. <u>Metal Products</u>                       |                        |        |                        |                      |        |               |                   |                |       |        |
| Primary metals                                 |                        |        |                        |                      |        |               | 25                |                |       | 25     |
| 5. <u>Lumber Products</u>                      |                        |        |                        |                      |        |               |                   |                |       |        |
| a. Lumber, wood                                |                        |        |                        |                      |        |               |                   |                | 30    | 30     |
| b. Pulp, paper                                 |                        |        |                        |                      |        |               |                   |                |       | 0      |
| Subtotal                                       |                        |        |                        |                      |        |               |                   |                | 30    | 30     |
| 6. <u>Building Cement</u>                      |                        |        |                        |                      |        |               |                   |                |       | 0      |
| 7. <u>Miscellaneous</u>                        | 28                     | 10     |                        |                      |        | 4             | 206               |                | 9     | 257    |
| Total receipts                                 | 8,814                  | 1,124  |                        | 961                  | 5,198  | 223           | 410               | 8              | 49    | 16,787 |
| Percent                                        | 52.5                   | 6.7    |                        | 5.8                  | 31.0   | 1.3           | 2.4               | 0              | .3    | 100.0  |
| Total coastwise                                | 10,908                 | 3,523  | 110                    | 5,068                | 5,918  | 429           | 505               | 285            | 49    | 26,795 |
| Percent of total                               | 40.7                   | 13.1   | .4                     | 18.9                 | 22.1   | 1.6           | 1.9               | 1.1            | .2    | 100.0  |

## HISTORICAL COMMODITY DATA, INDIVIDUAL PORTS

### 6. SAN FRANCISCO HARBOR

As used herein, San Francisco Harbor includes all the facilities for handling waterborne commerce from Fort Point to the San Francisco Airport on the west side of San Francisco Bay.

a. General Trends Prior to 1950. Prior to the beginning of the gold rush in 1848, a few vessels had entered the bay, largely handling trade goods in exchange for hides and tallow. The gold rush changed all that. The great influx of miners with their supplies and equipment found San Francisco, with its small nucleus of development, deep-water, and nearness to the Golden Gate, a natural harbor for development. San Francisco Harbor grew with the growth of the area, and at one time was a great exporter of grain and lumber, along with several other bay ports. San Francisco gradually evolved into a general cargo port, although shipments of grain and rice still continue, but on a relatively small scale. Lumber is minor. In recent times, a diversified assortment of high value general cargo has passed through the port. This high value cargo plays a significant role in manufacturing and processing, as well as commercial activities in the San Francisco area.

b. Historic Commodity Movement, 1950-1970. Tonnage data by major commodity groups are shown in Table 6 for the 20-year period, 1950-1970, by 5-year intervals. Although foreign commerce has held up well, total ocean commerce has decreased since 1955, and particularly in the last five years ending in 1970, due to reduction in coastwise trade. Internal commerce

suffered also, due primarily to decrease in petroleum products. Dollar values for foreign movements are shown in Table 7.

c. Categories of Commodity Movement, 1960-1970. The major commodities, summarized in the above paragraph, have been consolidated into four categories of cargo movement as follows:

- (1) Petroleum and liquid bulk cargo.
- (2) Dry bulk cargo.
- (3) General cargo.
- (4) Containerized and LASH cargo.

These data are shown in Table 8. The rapid rise in use of containers is evident from the table. Whereas, this method of handling cargo was negligible in 1965, an estimated 20% of ocean cargo was handled by this method in 1970.

d. Commodity Origins and Destinations, 1970. Presented in Table 9 is a summary of the origin and destination of the various commodity groups for year 1970. This is an estimate on the best information readily available. The widespread distribution of foreign trade is evident from the data in this table.



Table 6  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SAN FRANCISCO HARBOR  
(Thousands of short tons)

| Commodity Group         | 1950       | 1955       | 1960       | 1965       | 1970       |
|-------------------------|------------|------------|------------|------------|------------|
| <u>Foreign Exports</u>  |            |            |            |            |            |
| Food products           | 259        | 352        | 183        | 233        | 190        |
| Farm products           | 68         | 95         | 93         | 162        | 121        |
| Chemicals               | 41         | 45         | 35         | 82         | 55         |
| Petroleum products      | 63         | 54         | 39         | 54         | 67         |
| Metallic ores           | 84         | 56         | 34         | 20         | 0          |
| Department of Defense   |            |            |            |            |            |
| Controlled Cargo        | 179        | 45         | 5          | 0          | 6          |
| *Miscellaneous          | <u>122</u> | <u>154</u> | <u>145</u> | <u>243</u> | <u>354</u> |
| Subtotal, exports       | 816        | 801        | 534        | 794        | 793        |
| <u>Foreign Imports</u>  |            |            |            |            |            |
| Farm products           | 160        | 202        | 218        | 176        | 158        |
| Pulp and paper products | 80         | 132        | 93         | 180        | 242        |
| Coffee and cocoa        | 138        | 140        | 128        | 164        | 160        |
| Food products           | 173        | 162        | 185        | 117        | 121        |
| Metallic ores           | 83         | 90         | 157        | 65         | 6          |
| *Miscellaneous          | <u>41</u>  | <u>134</u> | <u>170</u> | <u>373</u> | <u>403</u> |
| Subtotal, imports       | 675        | 860        | 951        | 1,075      | 1,090      |
| Total, Foreign Commerce | 1,491      | 1,661      | 1,485      | 1,869      | 1,883      |

\* Itemization of miscellaneous categories on page 30.

Table 6  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SAN FRANCISCO HARBOR  
(Thousands of short tons)

| Commodity Group                            | 1950       | 1955       | 1960       | 1965      | 1970      |
|--------------------------------------------|------------|------------|------------|-----------|-----------|
| <u>Coastwise Shipments</u>                 |            |            |            |           |           |
| Petroleum products                         | 64         | 90         | 95         | 88        | 5         |
| Food products                              | 257        | 130        | 93         | 33        | 1         |
| Farm products                              | 14         | 15         | 3          | 17        | 0         |
| Machinery and transportation equipment     | 10         | 24         | 34         | 16        | 7         |
| Primary metals                             | 18         | 15         | 14         | 14        | 0         |
| Chemicals                                  | 7          | 5          | 12         | 9         | 2         |
| Miscellaneous                              | <u>82</u>  | <u>119</u> | <u>66</u>  | <u>54</u> | <u>10</u> |
| Subtotal, shipments                        | 452        | 398        | 317        | 231       | 25        |
| <u>Coastwise Receipts</u>                  |            |            |            |           |           |
| Primary metals                             | 222        | 213        | 344        | 157       | 0         |
| Food products                              | 81         | 64         | 57         | 27        | 10        |
| Petroleum products                         | 8          | 10         | 3          | 54        | 0         |
| Miscellaneous                              | <u>132</u> | <u>162</u> | <u>194</u> | <u>22</u> | <u>2</u>  |
| Subtotal, receipts                         | 443        | 449        | 598        | 260       | 12        |
| Total, Coastwise Commerce                  | 895        | 847        | 915        | 491       | 37        |
| Total, Ocean Commerce                      | 2,386      | 2,508      | 2,400      | 2,360     | 1,920     |
| <u>Internal Shipments</u>                  |            |            |            |           |           |
| Sand, gravel, rock                         | 50         | 0          | 0          | 0         | 0         |
| Petroleum products                         | 11         | 20         | 30         | 3         | 47        |
| Miscellaneous                              | <u>97</u>  | <u>40</u>  | <u>16</u>  | <u>22</u> | <u>6</u>  |
| Subtotal, shipments                        | 158        | 60         | 46         | 25        | 53        |
| <u>Internal Receipts</u>                   |            |            |            |           |           |
| Petroleum products                         | 2,069      | 1,568      | 1,860      | 2,340     | 1,755     |
| Non-metallic minerals                      | 2          | 7          | 2          | 231       | 11        |
| Food products                              | 232        | 59         | 34         | 13        | 2         |
| Stone, clay, glass                         | 14         | 12         | 5          | 10        | 0         |
| Miscellaneous                              | <u>60</u>  | <u>25</u>  | <u>11</u>  | <u>7</u>  | <u>1</u>  |
| Subtotal, receipts                         | 2,377      | 1,671      | 1,912      | 2,601     | 1,769     |
| Total, Internal Commerce                   | 2,535      | 1,731      | 1,958      | 2,626     | 1,822     |
| TOTAL ALL TRAFFIC,<br>SAN FRANCISCO HARBOR | 4,921      | 4,239      | 4,358      | 4,986     | 3,742     |

Table 6  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SAN FRANCISCO HARBOR  
(Thousands of short tons)

| Commodity Group                                     | 1950       | 1955      | 1960      | 1965       | 1970       |
|-----------------------------------------------------|------------|-----------|-----------|------------|------------|
| <u>Miscellaneous Foreign Exports</u>                |            |           |           |            |            |
| Textiles                                            | 0          | 23        | 2         | 0          | 1          |
| Lumber, pulp, paper                                 | 0          | 53        | 23        | 51         | 63         |
| Metals, (not ores)                                  | 0          | 37        | 21        | 12         | 76         |
| Non-metallic minerals                               | 0          | 0         | 6         | 6          | 24         |
| Machinery and vehicles                              | 0          | 41        | 52        | 84         | 71         |
| Other (including misc.<br>manufacturing)            | <u>122</u> | <u>0</u>  | <u>41</u> | <u>90</u>  | <u>119</u> |
| Total, exports                                      | 122        | 154       | 145       | 243        | 354        |
| <u>Miscellaneous Foreign Imports</u>                |            |           |           |            |            |
| Textiles                                            | 0          | 32        | 0         | 0          | 12         |
| Chemicals                                           | 0          | 26        | 24        | 23         | 41         |
| Metals (not ores)                                   | 0          | 50        | 35        | 47         | 36         |
| Non-metallic minerals                               | 0          | 0         | 0         | 7          | 49         |
| Machinery and vehicles                              | 0          | 12        | 70        | 77         | 26         |
| Lumber                                              | 0          | 0         | 41        | 19         | 1          |
| Other manufactured products<br>(hardware, electric) | <u>41</u>  | <u>14</u> | <u>0</u>  | <u>200</u> | <u>238</u> |
| Total, imports                                      | 41         | 134       | 170       | 373        | 403        |

Table 7  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

SAN FRANCISCO HARBOR

| Commodity Group         | 1950      | 1955      | 1960      | 1965      | 1970       |
|-------------------------|-----------|-----------|-----------|-----------|------------|
| <u>Foreign Exports</u>  |           |           |           |           |            |
| Food products           | \$ 38,210 | \$ 49,216 | \$ 48,519 | \$ 80,912 | \$ 73,759  |
| Farm products           | 23,779    | 17,237    | 53,821    | 13,586    | 19,169     |
| Chemicals               | 9,857     | 15,698    | 19,314    | 19,397    | 61,359     |
| Petroleum products      | 1,706     | 3,248     | 3,680     | 4,609     | 5,011      |
| Metallic ores           | 33,755    | 1,650     | 4,988     | 5,219     | 5,660      |
| Department of Defense   |           |           |           |           |            |
| Controlled Cargo        | N/A       | N/A       | N/A       | N/A       | N/A        |
| *Miscellaneous          | 22,031    | 105,901   | 135,904   | 217,396   | 538,179    |
| Subtotal, exports       | \$129,338 | \$192,950 | \$266,226 | \$341,119 | \$ 703,137 |
| <u>Foreign Imports</u>  |           |           |           |           |            |
| Farm products           | \$ 49,762 | \$ 23,311 | \$ 75,523 | \$ 41,716 | \$ 28,703  |
| Pulp and paper products | 7,265     | 15,302    | 12,204    | 4,458     | 33,210     |
| Coffee and cocoa        | 120,600   | 154,985   | 94,852    | 123,192   | 138,734    |
| Food products           | 31,865    | 32,596    | 53,490    | 88,531    | 89,991     |
| Metallic ores           | 9,696     | 2,228     | 10,781    | 8,478     | 7,560      |
| *Miscellaneous          | 28,063    | 55,294    | 131,705   | 253,452   | 442,845    |
| Subtotal, imports       | \$247,251 | \$283,716 | \$378,555 | \$519,827 | \$ 741,043 |
| Total, Foreign Commerce | \$376,589 | \$476,666 | \$644,781 | \$860,946 | 1,444,180  |

\* Itemization of miscellaneous categories on following page.



Table 7  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

SAN FRANCISCO HARBOR

| Commodity Group                                     | 1950          | 1955          | 1960          | 1965           | 1970           |
|-----------------------------------------------------|---------------|---------------|---------------|----------------|----------------|
| <u>Miscellaneous Foreign Exports</u>                |               |               |               |                |                |
| Textiles                                            | \$ 0          | \$ 15,108     | \$ 2,957      | \$ 0           | \$ 3,264       |
| Lumber, pulp, paper                                 | 0             | 13,550        | 4,048         | 2,506          | 5,045          |
| Metals, (not ores)                                  | 0             | 12,617        | 8,981         | 3,565          | 25,168         |
| Non-metallic minerals                               | 0             | 0             | 104           | 312            | 1,236          |
| Machinery and vehicles                              | 0             | 59,629        | 110,488       | 46,580         | 231,764        |
| Other (including misc.<br>manufacturing)            | <u>22,031</u> | <u>4,997</u>  | <u>9,326</u>  | <u>164,433</u> | <u>271,702</u> |
| Total, exports                                      | \$22,031      | \$105,901     | \$135,904     | \$217,396      | \$538,179      |
| <u>Miscellaneous Foreign Imports</u>                |               |               |               |                |                |
| Textiles                                            | \$ 0          | \$ 14,164     | \$ 0          | \$ 0           | \$ 13,846      |
| Chemicals                                           | 0             | 1,293         | 3,302         | 7,877          | 10,490         |
| Metals (not ores)                                   | 0             | 6,092         | 19,000        | 6,254          | 6,908          |
| Non-metallic minerals                               | 0             | 0             | 9,077         | 960            | 468            |
| Machinery and vehicles                              | 0             | 14,314        | 81,062        | 96,847         | 64,926         |
| Lumber                                              | 0             | 0             | 6,872         | 7,773          | 79             |
| Other manufactured products<br>(hardware, electric) | <u>28,063</u> | <u>19,431</u> | <u>12,392</u> | <u>133,741</u> | <u>346,128</u> |
| Total, imports                                      | \$28,063      | \$55,294      | \$131,705     | \$253,452      | \$442,845      |

Table 8

## Categories of Commodity Movement, 1960, 1965 and 1970

## SAN FRANCISCO HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1960                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Food products           |                                          |                   | 518              |                               | 518            |
| Farm products           |                                          | 204               | 110              |                               | 314            |
| Chemicals               |                                          |                   | 47               |                               | 47             |
| Petroleum products      | 137                                      |                   |                  |                               | 137            |
| Metallic ores           |                                          | 191               |                  |                               | 191            |
| Dept. of Defense        |                                          |                   | 5                |                               | 5              |
| Pulp & paper            |                                          |                   | 93               |                               | 93             |
| Coffee, cocoa           |                                          |                   | 128              |                               | 128            |
| Mach. & equip.          |                                          |                   | 34               |                               | 34             |
| Primary metals          |                                          |                   | 358              |                               | 358            |
| Miscellaneous           | 41                                       |                   | 534              |                               | 575            |
| Subtotal                | 178                                      | 395               | 1,827            | 0                             | 2,400          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 1,890                                    |                   |                  |                               | 1,890          |
| Non-Metallic min.       |                                          | 2                 |                  |                               | 2              |
| Food products           |                                          |                   | 34               |                               | 34             |
| Stone, clay, glass      |                                          |                   | 5                |                               | 5              |
| Miscellaneous           |                                          |                   | 27               |                               | 27             |
| Subtotal                | 1,890                                    | 2                 | 66               | 0                             | 1,958          |
| <u>Total Traffic</u>    | 2,068                                    | 397               | 1,893            | 0                             | 4,358          |

Table 8

Categories of Commodity Movement, 1960, 1965, and 1970

## SAN FRANCISCO HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1965                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Food products           |                                          |                   | 410              |                               | 410            |
| Farm products           |                                          | 310               | 45               |                               | 355            |
| Chemicals               |                                          |                   | 91               |                               | 91             |
| Petroleum products      | 196                                      |                   |                  |                               | 196            |
| Metallic ores           |                                          | 85                |                  |                               | 85             |
| Dept. of Defense        |                                          |                   |                  |                               | 0              |
| Pulp & paper            | 6                                        |                   | 174              |                               | 180            |
| Coffee, cocoa           |                                          |                   | 164              |                               | 164            |
| Mach. & equip.          |                                          |                   | 16               |                               | 16             |
| Primary metals          |                                          |                   | 171              |                               | 171            |
| Miscellaneous           |                                          |                   | 692              |                               | 692            |
| Subtotal                | 202                                      | 395               | 1,763            | negligible                    | 2,360          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 2,343                                    |                   |                  |                               | 2,343          |
| Non-metallic min.       |                                          | 231               |                  |                               | 231            |
| Food products           |                                          |                   | 13               |                               | 13             |
| Stone, clay, glass      |                                          |                   | 10               |                               | 10             |
| Miscellaneous           |                                          |                   | 29               |                               | 29             |
| Subtotal                | 2,343                                    | 231               | 52               | 0                             | 2,626          |
| <u>Total Traffic</u>    | 2,545                                    | 626               | 1,815            | negligible                    | 4,986          |

Table 8

## Categories of Commodity Movement, 1960, 1965 and 1970

## SAN FRANCISCO HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1970                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Food products           |                                          |                   | 225              | 97                            | 322            |
| Farm products           |                                          | 183               | 78               | 18                            | 279            |
| Chemicals               |                                          |                   | 40               | 17                            | 57             |
| Petroleum products      | 72                                       |                   |                  |                               | 72             |
| Metallic ores           |                                          | 6                 |                  |                               | 6              |
| Dept. of Defense        |                                          |                   |                  | 6                             | 6              |
| Pulp & Paper            | 21                                       |                   | 221              |                               | 242            |
| Coffee, cocoa           |                                          |                   | 160              |                               | 160            |
| Mach. & equip.          |                                          |                   | 7                |                               | 7              |
| Primary metals          |                                          |                   |                  |                               | 0              |
| Miscellaneous           |                                          | 2                 | 526              | 241                           | 769            |
| Subtotal                | 93                                       | 191               | 1,257            | 379                           | 1,920          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 1,802                                    |                   |                  |                               | 1,802          |
| Non-metallic min.       |                                          | 11                |                  |                               | 11             |
| Food products           |                                          |                   | 2                |                               | 2              |
| Stone, clay, glass      |                                          |                   |                  |                               | 0              |
| Miscellaneous           |                                          |                   | 7                | negligible                    | 7              |
| Subtotal                | 1,802                                    | 11                | 9                |                               | 1,822          |
| <u>Total Traffic</u>    | 1,895                                    | 202               | 1,266            | 379                           | 3,742          |



TABLE 9 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## SAN FRANCISCO HARBOR

| Commodity Group             | Tons (1,000) | Origin                 | Destination                |
|-----------------------------|--------------|------------------------|----------------------------|
| <u>Foreign Exports</u>      |              |                        |                            |
| Food Products               | 190          | 118 San Francisco      | Far East                   |
|                             |              | 13 San Francisco       | Asia                       |
|                             |              | 50 San Francisco       | Europe                     |
|                             |              | 7 San Francisco        | South America              |
|                             |              | 2 San Francisco        | Australia, Pacific Islands |
| Farm Products               | 121          | 102 San Francisco      | Far East                   |
|                             |              | 19 San Francisco       | Asia                       |
| Chemicals                   | 55           | 7 San Francisco        | Australia                  |
|                             |              | 2 San Francisco        | South America              |
|                             |              | 21 San Francisco       | Asia                       |
|                             |              | 8 San Francisco        | Far East                   |
|                             |              | 17 San Francisco       | Africa                     |
| Petroleum Products          | 67           | San Francisco          | Far East                   |
| Department of Defense Cargo | 6            | San Francisco          | Far East                   |
| Miscellaneous               | 354          | 146 San Francisco      | Far East                   |
|                             |              | 31 San Francisco       | Australia                  |
|                             |              | 13 San Francisco       | South America              |
|                             |              | 62 San Francisco       | Asia                       |
|                             |              | 23 San Francisco       | Europe                     |
|                             |              | 79 San Francisco       | Other Countries            |
| <u>Foreign Imports</u>      |              |                        |                            |
| Farm Products               | 158          | 38 Japan               | San Francisco              |
|                             |              | 120 Philippine Islands | San Francisco              |
| Pulp and Paper              | 242          | British Columbia       | San Francisco              |
| Coffee and Cocoa            | 160          | 94 Central and         |                            |
|                             |              | South America          | San Francisco              |
|                             |              | 12 Australia           | San Francisco              |
|                             |              | 9 Asia                 | San Francisco              |
|                             |              | 45 Africa              | San Francisco              |
| Food Products               | 121          | 10 Far East            | San Francisco              |
|                             |              | 109 Asia               | San Francisco              |
|                             |              | 2 Europe               | San Francisco              |
|                             |              | South America          | San Francisco              |
| Metallic Ores               | 6            |                        |                            |
| Miscellaneous               | 403          | 195 Far East           | San Francisco              |
|                             |              | 12 Canada              | San Francisco              |
|                             |              | 46 Mexico              | San Francisco              |
|                             |              | 71 Europe              | San Francisco              |
|                             |              | 12 Africa              | San Francisco              |
|                             |              | 42 Asia                | San Francisco              |
|                             |              | 14 Australia           | San Francisco              |
|                             |              | 11 Other Countries     | San Francisco              |

Continued

TABLE 9 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## SAN FRANCISCO HARBOR

| Commodity Group            | Tons (1,000) | Origin              | Destination                |
|----------------------------|--------------|---------------------|----------------------------|
| <u>Coastwise Shipments</u> |              |                     |                            |
| Petroleum Products         | 5            | San Francisco       | Hawaii                     |
| Food Products              | 1            | San Francisco       | Hawaii                     |
| Machinery and Equipment    | 7            | San Francisco       | Hawaii                     |
| Chemicals                  | 2            | San Francisco       | Hawaii                     |
| Miscellaneous              | 10           | San Francisco       | Hawaii                     |
| <u>Coastwise Receipts</u>  |              |                     |                            |
| Food Products              | 10           | Coastal (North)     | San Francisco              |
| Miscellaneous              | 2            | Gulf States         | San Francisco              |
| Subtotal, Ocean Commerce   | 1,920        |                     |                            |
| <u>Internal Shipments</u>  |              |                     |                            |
| Petroleum Products         | 47           | San Francisco       | East Bay Area              |
| Miscellaneous              | 6            | San Francisco       | Stockton                   |
| <u>Internal Receipts</u>   |              |                     |                            |
| Petroleum Products         | 1,755        | Bay Area Refineries | San Francisco              |
| Non-Metallic Minerals      | 11           | San Francisco       | Miscellaneous<br>Bay Ports |
| Food Products              | 2            | From Sea            | San Francisco              |
| Miscellaneous              | 1            | San Francisco       | Napa                       |
| Subtotal, Internal Traffic | 1,822        |                     |                            |
| TOTAL TRAFFIC              | 3,742        |                     |                            |

## 7. REDWOOD CITY HARBOR

a. General Trends Prior to 1950. The present 30-foot channel project, completed in 1965, is the culmination of several successive improvements beginning with a channel three feet deep in Redwood Creek. Prior to 1925, commerce was small and rather erratic, ranging from less than 10,000 tons to about 70,000 tons per year consisting of hides, bottles, fish, salt tanbark, and other local products. Beginning in 1925, large amounts of oyster shells and fuel oil were shipped to the port and substantial quantities of cement were shipped from the port. By about 1950, receipt of oyster shells and petroleum products and shipments of cement had substantially increased and comprised virtually all the traffic.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown in Table 10 for the 20-year period, 1950-1970, by 5-year intervals. Mixed trends are evident. Foreign commerce appears to have reached a peak about 1965 and then declined due primarily to reduction in salt. Coastwise trade reached a peak in 1955, declined significantly by 1965 and then to have substantially recovered by 1970. Dollar values for foreign movements are shown in Table 11. Internal traffic appears to have peaked in 1965 and then declined due to reduction in petroleum products and marine shells.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for the years selected are summarized in Table 12. This is a dry bulk port. Most of the petroleum shipments are by shallow-draft barge.

d. Commodity Origins and Destinations, 1970. Presented in Table 12 is a summary of the origin and destination of the various commodity groups for year 1970.



Table 10  
Waterborne Commerce Tonnage by Commodities, 1950-1970

REDWOOD CITY HARBOR  
(Thousands of short tons)

| Commodity Group            | 1950 | 1955 | 1960  | 1965 | 1970  |
|----------------------------|------|------|-------|------|-------|
| <u>Foreign Exports</u>     |      |      |       |      |       |
| Salt                       | 0    | 93   | 361   | 401  | 194   |
| Canned fruits              | 0    | 0    | 0     | 13   | 2     |
| Miscellaneous              | 0    | 0    | 0     | 0    | 21    |
| Subtotal, exports          | 0    | 93   | 361   | 414  | 217   |
| <u>Foreign Imports</u>     |      |      |       |      |       |
| Gypsum and plaster rock,   | 0    | 80   | 93    | 68   | 84    |
| limestone                  | 0    | 0    | 0     | 0    | 61    |
| Petroleum products         | 15   | 0    | 1     | 6    | 0     |
| Miscellaneous              | 15   | 80   | 94    | 74   | 145   |
| Subtotal, imports          |      |      |       |      |       |
| TOTAL, FOREIGN COMMERCE    | 15   | 173  | 455   | 488  | 362   |
| <u>Coastwise Shipments</u> |      |      |       |      |       |
| Salt                       | 0    | 348  | 87    | 111  | 180   |
| Building cement            | 274  | 465  | 547   | 210  | 472   |
| Miscellaneous              | 0    | 0    | 3     | 0    | 0     |
| Subtotal, shipments        | 274  | 813  | 637   | 321  | 652   |
| <u>Coastwise Receipts</u>  |      |      |       |      |       |
| Lumber and wood products   | 0    | 0    | 49    | 68   | 30    |
| Building cement            | 0    | 0    | 0     | 7    | 0     |
| Petroleum products         | 0    | 0    | 0     | 0    | 11    |
| Subtotal, receipts         | 0    | 0    | 49    | 75   | 41    |
| TOTAL, Coastwise Commerce  | 274  | 813  | 686   | 396  | 693   |
| TOTAL, Ocean Commerce      | 289  | 986  | 1,141 | 884  | 1,055 |

Table 10  
Waterborne Commerce Tonnage by Commodities, 1950-1970

REDWOOD CITY HARBOR  
(Thousands of short tons)

| Commodity Group                            | 1950     | 1955     | 1960       | 1965       | 1970      |
|--------------------------------------------|----------|----------|------------|------------|-----------|
| <u>Internal Shipments</u>                  |          |          |            |            |           |
| Building cement                            | <u>0</u> | <u>0</u> | <u>175</u> | <u>166</u> | <u>75</u> |
| Subtotal, shipments                        | 0        | 0        | 175        | 166        | 75        |
| <u>Internal Receipts</u>                   |          |          |            |            |           |
| Petroleum products                         | 239      | 527      | 540        | 930        | 137       |
| Marine shells                              | 1,094    | 1,295    | 1,365      | 1,494      | 901       |
| Miscellaneous                              | <u>0</u> | <u>0</u> | <u>13</u>  | <u>4</u>   | <u>15</u> |
| Subtotal, receipts                         | 1,333    | 1,822    | 1,918      | 2,428      | 1,053     |
| Total, Internal Commerce                   | 1,333    | 1,822    | 2,093      | 2,594      | 1,128     |
| TOTAL, ALL TRAFFIC,<br>REDWOOD CITY HARBOR | 1,622    | 2,808    | 3,234      | 3,478      | 2,183     |

Table 11  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

REDWOOD CITY HARBOR

| Commodity Group                       | 1950     | 1955  | 1960    | 1965    | 1970    |
|---------------------------------------|----------|-------|---------|---------|---------|
| <u>Foreign Exports</u>                |          |       |         |         |         |
| Salt                                  | \$ 0     | \$508 | \$1,558 | \$1,686 | \$ 819  |
| Canned fruits                         | 0        | 0     | 0       | 2,552   | 471     |
| Miscellaneous                         | 0        | 0     | 0       | 379     | 417     |
| Subtotal, exports                     | \$ 0     | \$508 | \$1,558 | \$4,617 | \$1,707 |
| <u>Foreign Imports</u>                |          |       |         |         |         |
| Gypsum and plaster rock,<br>limestone | \$ 0     | \$ 74 | \$ 85   | \$ 80   | \$ 96   |
| Petroleum products                    | 0        | 0     | 0       | 0       | 1,266   |
| Miscellaneous                         | 1,000    | 0     | 1       | 410     | 0       |
| Subtotal, imports                     | \$ 1,000 | \$ 74 | \$ 86   | \$ 490  | \$1,362 |
| Total, Foreign Commerce               | \$ 1,000 | \$582 | \$1,644 | \$5,107 | \$3,069 |

Table 12

Categories of Commodity Movement, 1960, 1965 and 1970

## REDWOOD CITY HARBOR

| COMMODITY<br>GROUP       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|--------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1960                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>    |                                          |                   |                  |                               |                |
| Salt                     |                                          | 448               |                  |                               | 448            |
| Gypsum & plaster<br>rock |                                          | 93                |                  |                               | 93             |
| Building cement          |                                          | 547               |                  |                               | 547            |
| Lumber                   |                                          |                   | 49               |                               | 49             |
| Miscellaneous            |                                          |                   | 4                |                               | 4              |
| Subtotal                 | 0                                        | 1,088             | 53               | 0                             | 1,141          |
| <u>Internal Traffic</u>  |                                          |                   |                  |                               |                |
| Building cement          |                                          | 175               |                  |                               | 175            |
| Petroleum products       | 540                                      |                   |                  |                               | 540            |
| Marine shells            |                                          | 1,365             |                  |                               | 1,365          |
| Miscellaneous            |                                          |                   | 13               | 0                             | 13             |
| Subtotal                 | 540                                      | 1,540             | 13               | 0                             | 2,093          |
| <u>Total Traffic</u>     | 540                                      | 2,628             | 66               | 0                             | 3,234          |



Table 12

## Categories of Commodity Movement, 1960, 1965 and 1970

## REDWOOD CITY HARBOR

| COMMODITY<br>GROUP       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|--------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1965                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>    |                                          |                   |                  |                               |                |
| Salt                     |                                          | 512               |                  |                               | 512            |
| Gypsum & plaster<br>rock |                                          | 68                |                  |                               | 68             |
| Building cement          |                                          | 217               |                  |                               | 217            |
| Lumber                   |                                          |                   | 68               |                               | 68             |
| Food products            |                                          |                   | 13               |                               | 13             |
| Miscellaneous            |                                          |                   | 6                |                               | 6              |
| Subtotal                 | 0                                        | 797               | 87               | 0                             | 884            |
| <u>Internal Traffic</u>  |                                          |                   |                  |                               |                |
| Building cement          |                                          | 166               |                  |                               | 166            |
| Petroleum products       | 930                                      |                   |                  |                               | 930            |
| Marine shells            |                                          | 1,494             |                  |                               | 1,494          |
| Miscellaneous            |                                          |                   | 4                |                               | 4              |
| Subtotal                 | 930                                      | 1,660             | 4                |                               | 2,594          |
| <u>Total Traffic</u>     | 930                                      | 2,457             | 91               | 0                             | 3,478          |

Table 12

Categories of Commodity Movement, 1960, 1965, and 1970

## REDWOOD CITY HARBOR

| COMMODITY<br>GROUP       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|--------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1970                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>    |                                          |                   |                  |                               |                |
| Salt                     |                                          | 374               |                  |                               | 374            |
| Gypsum & plaster<br>rock |                                          | 84                |                  |                               | 84             |
| Building cement          |                                          | 472               |                  |                               | 472            |
| Lumber                   |                                          |                   | 30               |                               | 30             |
| Food products            |                                          |                   | 2                |                               | 2              |
| Petroleum products       | 72                                       |                   |                  |                               | 72             |
| Miscellaneous            |                                          |                   | 21               |                               | 21             |
| Subtotal                 | 72                                       | 930               | 53               | 0                             | 1,055          |
| <u>Internal Traffic</u>  |                                          |                   |                  |                               |                |
| Building cement          |                                          | 75                |                  |                               | 75             |
| Petroleum products       | 137                                      |                   |                  |                               | 137            |
| Marine shells            |                                          | 901               |                  |                               | 901            |
| Miscellaneous            |                                          |                   | 15               | 0                             | 15             |
| Subtotal                 | 137                                      | 976               | 15               | 0                             | 1,128          |
| <u>Total Traffic</u>     | 209                                      | 1,906             | 68               | 0                             | 2,183          |

TABLE 13 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## REDWOOD CITY HARBOR

| Commodity Group                 | Tons (1,000) | Origin              | Destination           |
|---------------------------------|--------------|---------------------|-----------------------|
| <u>Foreign Exports</u>          |              |                     |                       |
| Salt                            | 194          | Redwood City        | Japan                 |
| Food Products                   | 2            | San Jose            | Japan                 |
| Miscellaneous                   | 21           | Northern California | Japan                 |
| <u>Foreign Imports</u>          |              |                     |                       |
| Gypsum, Limestone               | 84           | Mexico              | Redwood City          |
| Petroleum Products              | 61           | Trinidad            | Redwood City          |
| <u>Coastwise Shipments</u>      |              |                     |                       |
| Salt                            | 180          | Redwood City        | Pacific Northwest     |
| Building Cement                 | 472          | Redwood City        | Pacific Northwest     |
| <u>Coastwise Receipts</u>       |              |                     |                       |
| Lumber                          | 30           | Northern California | Redwood City          |
| Petroleum Products              | <u>11</u>    | Southern California | Redwood City          |
| Subtotal, Ocean Commerce        | 1,055        |                     |                       |
| <u>Internal Shipments</u>       |              |                     |                       |
| Building Cement                 | 75           | Redwood City        | Sacramento, Bay Ports |
| <u>Internal Receipts</u>        |              |                     |                       |
| Petroleum Products              | 137          | Bay Area Refineries | Redwood City          |
| Marine Shells                   | 901          | Dredged from Bay    | Redwood City          |
| Miscellaneous<br>(Sand, Gravel) | <u>15</u>    | Suisun Bay          | Redwood City          |
| Subtotal, Internal Traffic      | 1,128        |                     |                       |
| TOTAL TRAFFIC                   | 2,183        |                     |                       |

## 8. OAKLAND HARBOR

Oakland Harbor includes the approximate two-mile outer harbor and seven-mile inner harbor, comprising the area from about the Bay Bridge crossing to San Leandro Bay. Commercial statistics for Alameda are included with Oakland.

a. General Trends Prior to 1950. Prior to the formation of the port, there were substantial quantities of ocean commerce, including such items as lumber, building materials, hay, flour, grain, coal, wood and other cargo. There were also substantial amounts of local cargo and passenger traffic. Initially, however, the city of Oakland was unable to develop the port for legal reasons. It took many years of legal battles to overcome the barriers. The issues were finally settled and Oakland started to build the port in 1907. Even after 1907, development was rather slow and Oakland existed purely as a local port with no regular steamship service and only infrequent domestic sailings. In 1927, a Board of Port Commissioners was created to expedite development. Foreign and domestic commerce gradually increased and now substantial quantities of food products, chemicals, and other cargo are handled at the port. The development of the petroleum industry resulted in substantial shipments of petroleum products via barge to port. Large tonnages of food products and other commodities are moved to and from the port from other inland terminals.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown in Table 14. There have been large increases in foreign commerce. Total coastwise traffic has also increased substantially, although there was a slight reduction in coastwise receipts. Internal traffic



has also shown a large increase. Dollar values for foreign movement are shown in Table 15.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for four major categories of traffic for the years selected are summarized in Table 16. Container cargo, which was negligible in 1960, accounted for about 30% of the total ocean commerce by 1970.

d. Commodity Origins and Destinations, 1970. Presented in Table 17 is a summary of the origins and destinations of the various commodity groups for year 1970. This is an estimate based on the best information readily available. The widespread distribution of foreign trade is evident from data in the table.

Table 14  
Waterborne Commerce Tonnage by Commodities, 1950-1970

OAKLAND HARBOR  
(Thousands of short tons)

| Commodity Group         | 1950      | 1955      | 1960      | 1965      | 1970       |
|-------------------------|-----------|-----------|-----------|-----------|------------|
| <u>Foreign Exports</u>  |           |           |           |           |            |
| Iron and steel scrap    | 0         | 170       | 242       | 353       | 449        |
| Food products           | 164       | 310       | 267       | 323       | 381        |
| Department of Defense   |           |           |           |           |            |
| Controlled Cargo        | 167       | 47        | 60        | 47        | 15         |
| Farm products           | 31        | 62        | 155       | 44        | 68         |
| Primary metals          | 13        | 12        | 14        | 32        | 45         |
| Chemicals               | 62        | 84        | 40        | 25        | 70         |
| Petroleum products      | 28        | 31        | 23        | 34        | 18         |
| Non-metallic minerals   | 194       | 4         | 4         | 0         | 26         |
| *Miscellaneous          | <u>25</u> | <u>51</u> | <u>50</u> | <u>64</u> | <u>242</u> |
| Subtotal, exports       | 684       | 771       | 855       | 922       | 1,314      |
| <u>Foreign Imports</u>  |           |           |           |           |            |
| Primary metals          | 13        | 8         | 106       | 157       | 393        |
| Pulp and paper products | 6         | 11        | 65        | 59        | 5          |
| Chemicals               | 15        | 9         | 3         | 6         | 25         |
| Food products           | 25        | 13        | 38        | 43        | 145        |
| Farm products           | 58        | 19        | 19        | 26        | 18         |
| Machinery, vehicles     | 0         | 0         | 0         | 4         | 105        |
| *Miscellaneous          | <u>2</u>  | <u>34</u> | <u>14</u> | <u>89</u> | <u>148</u> |
| Subtotal, imports       | 119       | 94        | 245       | 384       | 839        |
| TOTAL, FOREIGN COMMERCE | 803       | 865       | 1,100     | 1,306     | 2,153      |

\* Itemization of miscellaneous categories on page 51.

Table 14

## Waterborne Commerce Tonnage by Commodities, 1950-1970

## OAKLAND HARBOR

| Commodity Group                       | 1950  | 1955  | 1960  | 1965  | 1970  |
|---------------------------------------|-------|-------|-------|-------|-------|
| <u>Coastwise Shipments</u>            |       |       |       |       |       |
| Food products                         | 235   | 453   | 334   | 393   | 313   |
| Petroleum products                    | 13    | 60    | 54    | 120   | 240   |
| Crude petroleum                       | 0     | 10    | 0     | 0     | 0     |
| Farm products                         | 8     | 6     | 5     | 78    | 112   |
| Chemicals                             | 7     | 48    | 43    | 47    | 63    |
| Machinery                             | 0     | 0     | 0     | 32    | 53    |
| Pulp and paper products               | 5     | 15    | 6     | 28    | 26    |
| Non-metallic ores                     | 170   | 18    | 10    | 0     | 1     |
| Miscellaneous                         | 75    | 141   | 151   | 226   | 468   |
| Subtotal, shipments                   | 513   | 751   | 603   | 924   | 1,276 |
| <u>Coastwise Receipts</u>             |       |       |       |       |       |
| Petroleum products                    | 621   | 600   | 726   | 660   | 48    |
| Food products                         | 78    | 153   | 152   | 288   | 411   |
| Chemicals                             | 12    | 16    | 58    | 84    | 76    |
| Primary metals                        | 51    | 45    | 60    | 42    | 25    |
| Pulp, paper products                  | 46    | 49    | 11    | 0     | 0     |
| Miscellaneous                         | 24    | 65    | 68    | 94    | 19    |
| Subtotal, receipts                    | 832   | 928   | 1,075 | 1,168 | 579   |
| Total, coastwise commerce             | 1,345 | 1,679 | 1,678 | 2,092 | 1,855 |
| Total, ocean commerce                 | 2,148 | 2,544 | 2,778 | 3,398 | 4,008 |
| <u>Internal Shipments</u>             |       |       |       |       |       |
| Petroleum products                    | 271   | 322   | 402   | 190   | 25    |
| Food products                         | 33    | 8     | 8     | 15    | 89    |
| Miscellaneous                         | 30    | 27    | 8     | 0     | 724   |
| Subtotal, shipments                   | 334   | 357   | 418   | 205   | 838   |
| <u>Internal Receipts</u>              |       |       |       |       |       |
| Petroleum products                    | 653   | 957   | 794   | 1,190 | 1,073 |
| Non-metallic minerals                 | 155   | 58    | 160   | 144   | 12    |
| Food products                         | 0     | 0     | 0     | 101   | 82    |
| Sand, gravel, rock                    | 105   | 92    | 86    | 0     | 518   |
| Miscellaneous                         | 24    | 24    | 14    | 13    | 3     |
| Subtotal, receipts                    | 937   | 1,131 | 1,054 | 1,448 | 1,688 |
| Total, internal commerce              | 1,271 | 1,488 | 1,472 | 1,653 | 2,526 |
| TOTAL ALL TRAFFIC - OAKLAND<br>HARBOR | 3,419 | 4,032 | 4,250 | 5,051 | 6,534 |

Table 14  
Waterborne Commerce Tonnage by Commodities, 1950-1970

OAKLAND HARBOR

| Commodity Group                           | 1950      | 1955       | 1960     | 1965      | 1970      |
|-------------------------------------------|-----------|------------|----------|-----------|-----------|
| <u>Miscellaneous Foreign Exports</u>      |           |            |          |           |           |
| Lumber                                    | 0         | 16         | 8        | 17        | 46        |
| Ores                                      | 0         | 3          | 11       | 0         | 10        |
| Textiles                                  | 0         | 3          | 22       | 0         | 0         |
| Minerals                                  | 0         | 0          | 3        | 17        | 0         |
| Hardware, electronic<br>instruments, etc. | 0         | 3          | 6        | 11        | 119       |
| Non-ferrous scrap                         | 0         | 0          | #        | #         | 11        |
| Other                                     | <u>25</u> | <u>26*</u> | <u>0</u> | <u>19</u> | <u>56</u> |
| Total, exports                            | 25        | 51         | 50       | 64        | 242       |
| <u>Miscellaneous Foreign Imports</u>      |           |            |          |           |           |
| Lumber                                    | 0         | 0          | 6        | 13        | 12        |
| Ores                                      | 0         | 0          | 1        | 10        | 13        |
| Minerals                                  | 0         | 0          | 6        | 0         | 1         |
| Petroleum                                 | 0         | 31         | 0        | 7         | 19        |
| Hardware, electronic<br>instruments, etc. | 0         | 0          | 0        | 11        | 102       |
| Other                                     | <u>2</u>  | <u>3</u>   | <u>1</u> | <u>48</u> | <u>1</u>  |
| Total, imports                            | 2         | 34         | 14       | 89        | 148       |

# Included in ores.

\* Petroleum included.



Table 15  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

OAKLAND HARBOR

| Commodity Group         | 1950     | 1955      | 1960      | 1965      | 1970      |
|-------------------------|----------|-----------|-----------|-----------|-----------|
| <u>Foreign Exports</u>  |          |           |           |           |           |
| Iron and steel scrap    | \$ 0     | \$ 6,102  | \$ 6,491  | \$ 13,116 | \$ 23,202 |
| Food products           | 24,195   | 61,609    | 64,457    | 85,241    | 147,810   |
| Department of Defense   |          |           |           |           |           |
| Controlled Cargo        | N/A      | N/A       | N/A       | N/A       | N/A       |
| Farm products           | 10,841   | 22,581    | 60,951    | 27,340    | 45,268    |
| Primary metals          | 2,316    | 2,352     | 3,926     | 3,565     | 8,000     |
| Chemicals               | 14,906   | 12,856    | 23,237    | 9,223     | 40,031    |
| Petroleum products      | 758      | 1,999     | 2,263     | 2,372     | 3,456     |
| Non-metallic minerals   | 9,751    | 120       | 316       | 0         | 3,715     |
| *Miscellaneous          | 4,611    | 38,377    | 26,633    | 63,524    | 240,502   |
| Subtotal, exports       | \$67,378 | \$145,996 | \$188,274 | \$204,381 | \$511,984 |
| <u>Foreign Imports</u>  |          |           |           |           |           |
| Primary metals          | \$ 906   | \$ 1,663  | \$ 2,565  | \$ 18,684 | \$ 57,940 |
| Pulp and paper products | 545      | 1,273     | 7,805     | 6,570     | 2,423     |
| Chemicals               | 1,146    | 440       | 285       | 1,477     | 11,663    |
| Food products           | 9,128    | 2,561     | 16,823    | 51,279    | 58,017    |
| Farm products           | 18,039   | 2,193     | 6,479     | 1,384     | 5,998     |
| Machinery, vehicles     | 0        | 0         | 1,779     | 12,482    | 99,866    |
| *Miscellaneous          | 2,537    | 5,552     | 6,125     | 34,930    | 239,241   |
| Subtotal, imports       | \$32,301 | \$ 13,682 | \$ 41,861 | \$126,806 | \$475,148 |
| TOTAL, FOREIGN COMMERCE | \$99,679 | \$159,678 | \$230,135 | \$331,187 | \$987,132 |

\*Itemization of miscellaneous categories on following page.

Table 15  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

OAKLAND HARBOR

| Commodity Group                        | 1950         | 1955          | 1960         | 1965          | 1970          |
|----------------------------------------|--------------|---------------|--------------|---------------|---------------|
| <u>Miscellaneous Foreign Exports</u>   |              |               |              |               |               |
| Lumber                                 | \$ 0         | \$ 513        | \$ 1,408     | \$ 340        | \$ 8,918      |
| Ores                                   | 0            | 1,791         | 2,890        | 0             | 15,836        |
| Textiles                               | 0            | 19,984        | 512          | 1,005         | 0             |
| Minerals                               | 0            | 0             | 51           | 316           | 0             |
| Hardware, electronic instruments, etc. | 0            | 5,516         | 21,772       | 33,002        | 115,276       |
| Non-ferrous scrap                      | 0            | 0             | 0            | 0             | 7,671         |
| Other                                  | <u>4,611</u> | <u>10,573</u> | <u>0</u>     | <u>28,861</u> | <u>92,801</u> |
| Total, exports                         | \$4,611      | \$38,377      | \$26,633     | \$63,524      | \$240,502     |
| <u>Miscellaneous Foreign Imports</u>   |              |               |              |               |               |
| Lumber                                 | \$ 0         | \$ 0          | \$ 1,583     | \$ 5,478      | \$ 5,298      |
| Ores                                   | 0            | 0             | 800          | 406           | 7,831         |
| Minerals                               | 0            | 0             | 2,712        | 7             | 213           |
| Petroleum                              | 0            | 446           | 0            | 893           | 231           |
| Hardware, electronic instruments, etc. | 0            | 171           | 0            | 8,294         | 221,263       |
| Other                                  | <u>2,537</u> | <u>4,935</u>  | <u>1,030</u> | <u>19,852</u> | <u>4,405</u>  |
| Total, imports                         | \$2,537      | \$ 5,552      | \$ 6,125     | \$34,930      | \$239,241     |

Table 16

## Categories of Commodity Movement, 1960, 1965 and 1970

## OAKLAND HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                |               |                            |             |
|-------------------------|------------------------------------------|----------------|---------------|----------------------------|-------------|
|                         | Petroleum & Liquid Bulk                  | Dry Bulk Cargo | General Cargo | Containerized & LASH Cargo | Total Cargo |
| 1960                    |                                          |                |               |                            |             |
| <u>Ocean Commerce</u>   |                                          |                |               |                            |             |
| Iron & steel scrap      |                                          | 242            |               |                            | 242         |
| Food products           | 4                                        |                | 787           |                            | 791         |
| Dept. of Defense        |                                          |                | 60            |                            | 60          |
| Farm products           |                                          | 55             | 124           |                            | 179         |
| Primary metals          |                                          |                | 180           |                            | 180         |
| Chemicals               |                                          |                | 144           |                            | 144         |
| Petroleum products      | 803                                      |                |               |                            | 803         |
| Non-metallic min.       |                                          | 4              |               |                            | 4           |
| Pulp & paper            |                                          |                | 82            |                            | 82          |
| Non-metallic ores       |                                          | 10             |               |                            | 10          |
| Miscellaneous           |                                          |                | 283           |                            | 283         |
| Subtotal                | 807                                      | 311            | 1,660         | negligible                 | 2,778       |
| <u>Internal Traffic</u> |                                          |                |               |                            |             |
| Petroleum products      | 1,196                                    |                |               |                            | 1,196       |
| Food products           |                                          |                | 8             |                            | 8           |
| Non-metallic min.       |                                          | 160            |               |                            | 160         |
| Sand, gravel, rock      |                                          | 86             |               |                            | 86          |
| Miscellaneous           |                                          |                | 22            |                            | 22          |
| Subtotal                | 1,196                                    | 246            | 30            |                            | 1,472       |
| <u>Total Traffic</u>    | 2,003                                    | 557            | 1,690         | negligible                 | 4,250       |

Table 16

Categories of Commodity Movement, 1960, 1965 and 1970

## OAKLAND HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                |               |                            |             |
|-------------------------|------------------------------------------|----------------|---------------|----------------------------|-------------|
|                         | Petroleum & Liquid Bulk                  | Dry Bulk Cargo | General Cargo | Containerized & LASH Cargo | Total Cargo |
| 1965                    |                                          |                |               |                            |             |
| <u>Ocean Commerce</u>   |                                          |                |               |                            |             |
| Iron & Steel scrap      |                                          | 353            |               |                            | 353         |
| Food products           | 47                                       |                | 800           | 200                        | 1,047       |
| Dept. of Defense        |                                          |                | 27            | 20                         | 47          |
| Farm products           |                                          | 40             | 108           |                            | 148         |
| Primary metals          |                                          |                | 231           |                            | 231         |
| Chemicals               |                                          |                | 162           |                            | 162         |
| Petroleum products      | 814                                      |                |               |                            | 814         |
| Pulp and paper          |                                          |                | 87            |                            | 87          |
| Mach. & vehicles        |                                          |                | 36            |                            | 36          |
| Miscellaneous           |                                          |                | 393           | 80                         | 473         |
| Subtotal                | 861                                      | 393            | 1,844         | 300                        | 3,398       |
| <u>Internal Traffic</u> |                                          |                |               |                            |             |
| Petroleum products      | 1,380                                    |                |               |                            | 1,380       |
| Food products           | 15                                       |                | 101           |                            | 116         |
| Non-metallic min.       |                                          | 144            |               |                            | 144         |
| Miscellaneous           |                                          |                | 13            |                            | 13          |
| Subtotal                | 1,395                                    | 144            | 114           |                            | 1,653       |
| <u>Total Traffic</u>    | 2,256                                    | 537            | 1,958         | 300                        | 5,051       |



Table 16  
Categories of Commodity Movement, 1960, 1965 and 1970  
OAKLAND HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                |               |                            |             |
|-------------------------|------------------------------------------|----------------|---------------|----------------------------|-------------|
|                         | Petroleum & Liquid Bulk                  | Dry Bulk Cargo | General Cargo | Containerized & LASH Cargo | Total Cargo |
| 1970                    |                                          |                |               |                            |             |
| <u>Ocean Commerce</u>   |                                          |                |               |                            |             |
| Iron & steel scrap      |                                          | 449            |               |                            | 449         |
| Food products           | 113                                      |                | 263           | 875                        | 1,251       |
| Dept. of Defense        |                                          |                |               | 15                         | 15          |
| Farm products           |                                          |                | 187           |                            | 187         |
| Primary metals          |                                          |                | 413           | 50                         | 463         |
| Chemicals               | 22                                       |                | 122           | 90                         | 234         |
| Petroleum products      | 306                                      |                |               |                            | 306         |
| Non-metallic min.       |                                          | 26             |               |                            | 26          |
| Pulp & paper            |                                          |                | 31            |                            | 31          |
| Mach. & vehicles        |                                          |                | 158           |                            | 158         |
| Non-metallic ores       |                                          | 1              |               |                            | 1           |
| Miscellaneous           |                                          |                | 717           | 170                        | 887         |
| Subtotal                | 441                                      | 476            | 1,891         | 1,200                      | 4,008       |
| <u>Internal Traffic</u> |                                          |                |               |                            |             |
| Petroleum products      | 1,098                                    |                |               |                            | 1,098       |
| Food products           | 89                                       |                | 82            |                            | 171         |
| Non-metallic min.       |                                          | 12             |               |                            | 12          |
| Sand, gravel, rock      |                                          | 518            |               |                            | 518         |
| Miscellaneous           |                                          | 724            | 3             |                            | 727         |
| Subtotal                | 1,187                                    | 1,254          | 85            | 0                          | 2,526       |
| <u>Total Traffic</u>    | 1,628                                    | 1,730          | 1,976         | 1,200                      | 6,534       |

TABLE 17 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## OAKLAND HARBOR

| Commodity Group             | Tons (1,000) | Origin           | Destinations    |
|-----------------------------|--------------|------------------|-----------------|
| <u>Foreign Exports</u>      |              |                  |                 |
| Iron and steel scrap        | 449          | Oakland          | Japan           |
| Food products               | 381          | 237 Oakland      | Far East        |
|                             |              | 20 Oakland       | Asia            |
|                             |              | 10 Oakland       | Australia       |
|                             |              | 100 Oakland      | Europe          |
|                             |              | 14 Oakland       | South America   |
| Department of Defense Cargo | 15           | Oakland          | Far East        |
| Farm products               | 68           | 58 Oakland       | Far East        |
|                             |              | 10 Oakland       | Asia            |
| Primary metals              | 45           | 38 Oakland       | Japan           |
|                             |              | 7 Oakland        | Europe          |
| Chemicals                   | 70           | 39 Oakland       | South America   |
|                             |              | 18 Oakland       | Europe          |
|                             |              | 10 Oakland       | Japan           |
|                             |              | 3 Oakland        | Asia            |
| Petroleum products          | 18           | Oakland          | Hawaii          |
| Non-metallic minerals       | 26           | 5 Oakland        | Hawaii          |
|                             |              | 21 Oakland       | Far East        |
| Miscellaneous               | 242          | 97 Oakland       | Far East        |
|                             |              | 5 Oakland        | Canada          |
|                             |              | 9 Oakland        | Mexico          |
|                             |              | 16 Oakland       | Europe          |
|                             |              | 42 Oakland       | Asia            |
|                             |              | 20 Oakland       | Australia       |
|                             |              | 53 Oakland       | Other Countries |
| <u>Foreign Imports</u>      |              |                  |                 |
| Primary metals              | 393          | Japan            | Oakland         |
| Pulp and paper products     | 5            | Canada           | Oakland         |
| Chemicals                   | 25           | 22 Japan         | Oakland         |
|                             |              | 3 Europe         | Oakland         |
| Food products               | 145          | 69 Asia          | Oakland         |
|                             |              | 6 Far East       | Oakland         |
|                             |              | 2 Europe         | Oakland         |
|                             |              | 68 South America | Oakland         |
| Farm products               | 18           | 8 Japan          | Oakland         |
|                             |              | 10 Asia          | Oakland         |

TABLE 17 - COMMODITY ORIGINS AND DESTINATIONS, 1970

OAKLAND HARBOR  
(Continued)

| Commodity Group            | Tons (1,000) | Origin               | Destination |
|----------------------------|--------------|----------------------|-------------|
| Machinery and vehicles     | 105          | 48 Japan             | Oakland     |
|                            |              | 57 Europe            | Oakland     |
| Miscellaneous              | 148          | 65 Far East          | Oakland     |
|                            |              | 5 Canada             | Oakland     |
|                            |              | 17 Mexico            | Oakland     |
|                            |              | 28 Europe            | Oakland     |
|                            |              | 6 Africa             | Oakland     |
|                            |              | 16 Asia              | Oakland     |
|                            |              | 6 Australia          | Oakland     |
|                            |              | 4 Other              | Oakland     |
| <u>Coastwise Shipments</u> |              |                      |             |
| Food products              | 313          | 106 Oakland          | Puerto Rico |
|                            |              | 207 Oakland          | Hawaii      |
| Petroleum products         | 240          | 3 Oakland            | Puerto Rico |
|                            |              | 237 Oakland          | Hawaii      |
| Farm products              | 112          | Oakland              | Hawaii      |
| Chemicals                  | 63           | 5 Oakland            | Puerto Rico |
|                            |              | 58 Oakland           | Hawaii      |
| Machinery                  | 53           | 2 Oakland            | Puerto Rico |
|                            |              | 51 Oakland           | Hawaii      |
| Pulp and paper products    | 26           | 2 Oakland            | Puerto Rico |
|                            |              | 24 Oakland           | Hawaii      |
| Non-metallic minerals      | 1            | Oakland              | Hawaii      |
| Miscellaneous              | 468          | Oakland              | Hawaii      |
| <u>Coastwise Receipts</u>  |              |                      |             |
| Petroleum products         | 48           | 26 Southern Calif.   | Oakland     |
|                            |              | 14 Pacific Northwest | Oakland     |
|                            |              | 8 Atlantic Coast     | Oakland     |
| Food products              | 411          | 8 Puerto Rico        | Oakland     |
|                            |              | 403 Hawaii           | Oakland     |
| Chemicals                  | 76           | 3 Hawaii             | Oakland     |
|                            |              | 4 Atlantic           | Oakland     |
|                            |              | 69 Gulf States       | Oakland     |
| Primary metals             | 25           | Atlantic Coast       | Oakland     |
| Miscellaneous              | 19           | 9 Far East           | Oakland     |
|                            |              | 10 Hawaii            | Oakland     |
| Subtotal, Ocean Commerce   | 4,008        |                      |             |

TABLE 17 - COMMODITY ORIGINS AND DESTINATIONS, 1970

OAKLAND HARBOR  
(Continued)

| Commodity Group            | Tons (1,000) | Origin           | Destination         |
|----------------------------|--------------|------------------|---------------------|
| <u>Internal Shipments</u>  |              |                  |                     |
| Petroleum Products         | 25           | Oakland          | Richmond-Carquinez  |
| Food Products              | 89           | Oakland          | Stockton            |
| Miscellaneous              | 724          | 704 Oakland      | Waste dumped in bay |
|                            |              | 20 Oakland       | San Francisco       |
|                            |              |                  | Bay Ports           |
| <u>Internal Receipts</u>   |              |                  |                     |
| Petroleum Products         | 1,073        | San Francisco    |                     |
|                            |              | Bay Ports        | Oakland             |
| Non-Metallic Minerals      | 12           | Petaluma         | Oakland             |
| Food Products              | 82           | Carquinez        | Oakland             |
| Sand, Gravel, Rock         | 518          | 362 Ocean        | Oakland             |
|                            |              | 140 Suisun Bay   | Oakland             |
|                            |              | 16 San Francisco |                     |
|                            |              | Bay              | Oakland             |
| Miscellaneous              | 3            | San Francisco    |                     |
|                            |              | Bay Ports        | Oakland             |
| Subtotal, Internal Traffic | 2,526        |                  |                     |
| TOTAL TRAFFIC              | 6,534        |                  |                     |



## 9. RICHMOND HARBOR

The Richmond Harbor area includes all facilities from the inner harbor on the south to Point San Pablo in the north. This includes facilities in the inner harbor, Point Potrero, Point Richmond, Richmond Long Wharf, Molate Point, Point Orient, and the facilities at Point San Pablo. This encompasses several private terminals as well as the public terminals.

a. General Trends Prior to 1950. Traditionally, Richmond Harbor has been known for imports of crude petroleum and shipments of refined petroleum products. However, there has been significant passenger traffic as well as railroad freight traffic.

b. Historic Commodity Movement, 1950-1970. Tonnage data by major commodity groups are shown in Table 18 for the 20-year period, 1950-1970, by 5-year intervals. Total ocean commerce seems to have reached a peak about 1960, and then to have decreased. Foreign trade is off substantially due to reduction in imports of petroleum products. Coastwise trade is down somewhat, also due to reduction in shipments of petroleum products. Internal traffic has declined to about the level of 1955. Dollar values for the foreign movement are shown in Table 19.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for the years selected are summarized in Table 20. The overwhelming importance of petroleum products is evident from the data in the table.

d. Commodity Origins and Destinations, 1970. Presented in Table 21 is a summary of the origin and destination of the various commodity groups for year 1970.

Table 18  
Waterborne Commerce Tonnage by Commodities, 1950-1970

RICHMOND HARBOR  
(Thousands of short tons)

| Commodity Group            | 1950      | 1955      | 1960      | 1965      | 1970       |
|----------------------------|-----------|-----------|-----------|-----------|------------|
| <u>Foreign Exports</u>     |           |           |           |           |            |
| Petroleum products         | 214       | 617       | 464       | 330       | 289        |
| Iron and steel scrap       | 0         | 67        | 182       | 151       | 276        |
| Chemicals                  | 3         | 9         | 58        | 92        | 45         |
| Primary metals             | 0         | 0         | 6         | 22        | 2          |
| Department of Defense      |           |           |           |           |            |
| Controlled Cargo           | 0         | 32        | 0         | 0         | 0          |
| *Miscellaneous             | <u>15</u> | <u>42</u> | <u>38</u> | <u>33</u> | <u>47</u>  |
| Subtotal, exports          | 232       | 767       | 748       | 628       | 659        |
| <u>Foreign Imports</u>     |           |           |           |           |            |
| Crude petroleum            | 18        | 871       | 2,497     | 1,200     | 630        |
| Petroleum products         | 0         | 0         | 349       | 510       | 0          |
| Gypsum and plaster rock,   |           |           |           |           |            |
| limestone                  | 0         | 0         | 0         | 72        | 111        |
| Iron and steel scrap       | 10        | 0         | 0         | 0         | 0          |
| Metallic ores              | 2         | 62        | 25        | 18        | 34         |
| *Miscellaneous             | <u>8</u>  | <u>48</u> | <u>52</u> | <u>40</u> | <u>130</u> |
| Subtotal, imports          | 38        | 981       | 2,923     | 1,840     | 905        |
| Total, Foreign Commerce    | 270       | 1,748     | 3,671     | 2,468     | 1,564      |
| <u>Coastwise Shipments</u> |           |           |           |           |            |
| Petroleum products         | 3,377     | 4,128     | 3,914     | 2,590     | 2,911      |
| Chemicals                  | 0         | 6         | 49        | 165       | 14         |
| Miscellaneous              | <u>19</u> | <u>9</u>  | <u>15</u> | <u>23</u> | <u>32</u>  |
| Subtotal, shipments        | 3,396     | 4,143     | 3,978     | 2,778     | 2,957      |

Continued

\*Itemization of miscellaneous categories on page 63.

Table 18  
Waterborne Commerce Tonnage by Commodities, 1950-1970

RICHMOND HARBOR  
(Thousands of short tons)

| Commodity Group                       | 1950   | 1955   | 1960   | 1965   | 1970   |
|---------------------------------------|--------|--------|--------|--------|--------|
| <u>Coastwise Receipts</u>             |        |        |        |        |        |
| Crude petroleum                       | 3,528  | 3,496  | 3,960  | 4,270  | 4,330  |
| Petroleum products                    | 946    | 1,440  | 1,920  | 1,690  | 1,871  |
| Chemicals                             | 0      | 101    | 192    | 206    | 162    |
| Molasses                              | 0      | 0      | 0      | 18     | 3      |
| Miscellaneous                         | 64     | 14     | 2      | 3      | 229    |
| Subtotal, receipts                    | 4,538  | 5,051  | 6,074  | 6,187  | 6,595  |
| Total, coastwise commerce             | 7,934  | 9,194  | 10,052 | 8,965  | 9,552  |
| Total, ocean commerce                 | 8,204  | 10,942 | 13,723 | 11,433 | 11,116 |
| <u>Internal Shipments</u>             |        |        |        |        |        |
| Petroleum products                    | 2,137  | 2,394  | 2,832  | 3,240  | 2,237  |
| Sand, gravel, rock                    | 10     | 13     | 1      | 0      | 0      |
| Miscellaneous                         | 8      | 3      | 18     | 7      | 184    |
| Subtotal, shipments                   | 2,155  | 2,410  | 2,851  | 3,247  | 2,421  |
| <u>Internal Receipts</u>              |        |        |        |        |        |
| Petroleum products                    | 164    | 410    | 301    | 330    | 415    |
| Crude petroleum                       | 0      | 0      | 154    | 130    | 72     |
| Sugar                                 | 141    | 151    | 154    | 176    | 126    |
| Molasses                              | 0      | 17     | 0      | 0      | 3      |
| Building cement                       | 0      | 0      | 74     | 52     | 36     |
| Basic chemicals                       | 0      | 0      | 0      | 11     | 7      |
| Sand, gravel, rock                    | 22     | 100    | 3      | 0      | 59     |
| Miscellaneous                         | 2      | 2      | 1      | 15     | 36     |
| Subtotal, receipts                    | 329    | 680    | 687    | 714    | 754    |
| Total, Internal Commerce              | 2,484  | 3,090  | 3,538  | 3,961  | 3,175  |
| TOTAL ALL TRAFFIC,<br>RICHMOND HARBOR | 10,688 | 14,032 | 17,261 | 15,394 | 14,291 |

Table 18  
Waterborne Commerce Tonnage by Commodities, 1950-1970

RICHMOND HARBOR  
(Thousands of short tons)

| Commodity Group                      | 1950 | 1955 | 1960 | 1965 | 1970 |
|--------------------------------------|------|------|------|------|------|
| <u>Miscellaneous Foreign Exports</u> |      |      |      |      |      |
| Food                                 | 0    | 15   | 17   | 9    | 12   |
| Farm                                 | 15   | 18   | 18   | 19   | 16   |
| Machinery                            | 0    | 2    | 2    | 1    | 1    |
| Miscellaneous manufacturing          | 0    | 7    | 1    | 4    | 18   |
| Total, exports                       | 15   | 42   | 38   | 33   | 47   |
| <u>Miscellaneous Foreign Imports</u> |      |      |      |      |      |
| Machinery and vehicles               | 0    | 0    | 1    | 0    | 30   |
| Farm                                 | 0    | 0    | 36   | 18   | 1    |
| Food                                 | 0    | 0    | 0    | 0    | 35   |
| Lumber, pulp                         | 0    | 0    | 8    | 12   | 2    |
| Chemicals                            | 0    | 0    | 5    | 0    | 58   |
| Miscellaneous manufacturing          | 8    | 48   | 2    | 10   | 4    |
| Total, imports                       | 8    | 48   | 52   | 40   | 130  |

Table 19  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars  
RICHMOND HARBOR

| Commodity Group          | 1950         | 1955          | 1960          | 1965          | 1970          |
|--------------------------|--------------|---------------|---------------|---------------|---------------|
| <u>Foreign Exports</u>   |              |               |               |               |               |
| Petroleum products       | \$5,795      | \$13,276      | \$ 7,661      | \$ 9,682      | \$ 5,302      |
| Iron and steel scrap     | 0            | 2,401         | 6,368         | 5,667         | 12,981        |
| Chemicals                | 721          | 3,938         | 7,112         | 24,135        | 3,268         |
| Primary metals           | 0            | 0             | 58            | 3,572         | 88            |
| Department of Defense    |              |               |               |               |               |
| Controlled Cargo         | N/A          | N/A           | N/A           | N/A           | N/A           |
| *Miscellaneous           | <u>2,562</u> | <u>11,928</u> | <u>8,269</u>  | <u>13,087</u> | <u>27,443</u> |
| Subtotal, exports        | \$9,078      | \$31,543      | \$29,468      | \$56,143      | \$49,082      |
| <u>Foreign Imports</u>   |              |               |               |               |               |
| Crude petroleum          | \$ 9         | \$12,501      | \$29,316      | \$16,980      | \$ 8,049      |
| Petroleum products       | 0            | 0             | 5,000         | 3,687         | 0             |
| Gypsum and plaster rock, |              |               |               |               |               |
| limestone                | 0            | 0             | 0             | 81            | 129           |
| Iron and steel scrap     | 1            | 0             | 0             | 0             | 0             |
| Metallic ores            | 210          | 4,069         | 2,719         | 461           | 625           |
| *Miscellaneous           | <u>5,416</u> | <u>6,902</u>  | <u>13,087</u> | <u>8,069</u>  | <u>65,326</u> |
| Subtotal, imports        | \$ 5,636     | \$23,472      | \$50,122      | \$29,278      | \$74,129      |
| Total, Foreign Commerce  | \$14,714     | \$55,015      | \$79,590      | \$85,421      | \$123,211     |

\*Itemization of miscellaneous categories on following page.



Table 19  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

RICHMOND HARBOR

| Commodity Group                      | 1950           | 1955            | 1960            | 1965            | 1970            |
|--------------------------------------|----------------|-----------------|-----------------|-----------------|-----------------|
| <u>Miscellaneous Foreign Exports</u> |                |                 |                 |                 |                 |
| Food                                 | \$ 0           | \$ 3,992        | \$ 1,459        | \$ 1,066        | \$ 432          |
| Farm                                 | 2,562          | 3,523           | 3,523           | 3,274           | 4,193           |
| Machinery                            | 0              | 3,186           | 3,186           | 1,311           | 14,165          |
| Miscellaneous manufacturing          | 0              | 1,227           | 101             | 7,436           | 8,653           |
| Total, exports                       | <u>\$2,562</u> | <u>\$11,928</u> | <u>\$ 8,269</u> | <u>\$13,087</u> | <u>\$27,443</u> |
| <u>Miscellaneous Foreign Imports</u> |                |                 |                 |                 |                 |
| Machinery and vehicles               | \$ 0           | \$ 0            | \$ 2,893        | \$ 0            | \$48,842        |
| Farm                                 | 0              | 0               | 4,067           | 570             | 476             |
| Food                                 | 0              | 0               | 1,932           | 0               | 8,471           |
| Lumber, pulp                         | 0              | 0               | 0               | 2,443           | 355             |
| Chemicals                            | 0              | 0               | 489             | 0               | 2,499           |
| Miscellaneous manufacturing          | 5,416          | 6,902           | 3,706           | 5,056           | 4,683           |
| Total, imports                       | <u>\$5,416</u> | <u>\$ 6,902</u> | <u>\$13,087</u> | <u>\$ 8,069</u> | <u>\$65,326</u> |

Table 20

## Categories of Commodity Movement, 1960, 1965 and 1970

## RICHMOND HARBOR

| Method of Commodity Movement, 1,000 Tons |                    |       |                       |              |        |
|------------------------------------------|--------------------|-------|-----------------------|--------------|--------|
| COMMODITY<br>GROUP                       | Petroleum Dry Bulk |       | General Containerized |              | Total  |
|                                          | & Liquid<br>Bulk   | Cargo | Cargo                 | & LASH Cargo |        |
| 1960                                     |                    |       |                       |              |        |
| <u>Ocean Commerce</u>                    |                    |       |                       |              |        |
| Crude petroleum                          | 6,457              |       |                       |              | 6,457  |
| Petroleum products                       | 6,647              |       |                       |              | 6,647  |
| Iron & steel scrap                       |                    | 182   |                       |              | 182    |
| Chemicals                                | 269                |       | 30                    |              | 299    |
| Primary metals                           |                    |       | 6                     |              | 6      |
| Metallic ores                            |                    | 25    |                       |              | 25     |
| Miscellaneous                            |                    |       | 107                   |              | 107    |
| Subtotal                                 | 13,373             | 207   | 143                   |              | 13,723 |
| <u>Internal Traffic</u>                  |                    |       |                       |              |        |
| Crude petroleum                          | 154                |       |                       |              | 154    |
| Petroleum products                       | 3,133              |       |                       |              | 3,133  |
| Sugar                                    |                    |       | 154                   |              | 154    |
| Building cement                          |                    | 74    |                       |              | 74     |
| Sand, gravel, rock                       |                    | 4     |                       |              | 4      |
| Miscellaneous                            |                    |       | 19                    |              | 19     |
| Subtotal                                 | 3,287              | 78    | 173                   | 0            | 3,538  |
| Total Traffic                            | 16,660             | 285   | 316                   | 0            | 17,261 |

Table 20

## Categories of Commodity Movement, 1960, 1965 and 1970

## RICHMOND HARBOR

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                |               |                            |             |
|-------------------------|------------------------------------------|----------------|---------------|----------------------------|-------------|
|                         | Petroleum & Liquid Bulk                  | Dry Bulk Cargo | General Cargo | Containerized & LASH Cargo | Total Cargo |
| 1965                    |                                          |                |               |                            |             |
| <u>Ocean Commerce</u>   |                                          |                |               |                            |             |
| Crude petroleum         | 5,470                                    |                |               |                            | 5,470       |
| Petroleum products      | 5,120                                    |                |               |                            | 5,120       |
| Iron & steel scrap      |                                          | 151            |               |                            | 151         |
| Chemicals               | 417                                      |                | 46            |                            | 463         |
| Primary metals          |                                          |                | 22            |                            | 22          |
| Gypsum, limestone       |                                          | 72             |               |                            | 72          |
| Metallic ores           |                                          | 18             |               |                            | 18          |
| Molasses                | 18                                       |                |               |                            | 18          |
| Miscellaneous           |                                          |                | 99            |                            | 99          |
| Subtotal                | 11,025                                   | 241            | 167           |                            | 11,433      |
| <u>Internal Traffic</u> |                                          |                |               |                            |             |
| Crude petroleum         | 130                                      |                |               |                            | 130         |
| Petroleum products      | 3,570                                    |                |               |                            | 3,570       |
| Sugar                   |                                          |                | 176           |                            | 176         |
| Building cement         |                                          | 52             |               |                            | 52          |
| Basic chemicals         | 10                                       |                | 1             |                            | 11          |
| Miscellaneous           |                                          |                | 22            |                            | 22          |
| Subtotal                | 3,710                                    | 52             | 199           | 0                          | 3,961       |
| Total Traffic           | 14,735                                   | 293            | 366           | 0                          | 15,394      |

Table 20

## Categories of Commodity Movement, 1960, 1965 and 1970

## RICHMOND HARBOR

|                         | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
| COMMODITY<br>GROUP      | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1970                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 4,960                                    |                   |                  |                               | 4,960          |
| Petroleum products      | 5,071                                    |                   |                  |                               | 5,071          |
| Iron & steel scrap      |                                          | 276               |                  |                               | 276            |
| Chemicals               | 200                                      |                   | 21               |                               | 221            |
| Primary metals          |                                          |                   | 2                |                               | 2              |
| Metallic-ores           |                                          | 34                |                  |                               | 34             |
| Gypsum, limestone       |                                          | 111               |                  |                               | 111            |
| Molasses                | 3                                        |                   |                  |                               | 3              |
| Miscellaneous           | 42                                       |                   | 396              |                               | 438            |
| Subtotal                | 10,276                                   | 421               | 419              | 0                             | 11,116         |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Crude petroleum         | 72                                       |                   |                  |                               | 72             |
| Petroleum products      | 2,652                                    |                   |                  |                               | 2,652          |
| Sugar                   |                                          |                   | 126              |                               | 126            |
| Molasses                | 3                                        |                   |                  |                               | 3              |
| Building cement         |                                          | 36                |                  |                               | 36             |
| Basic chemicals         | 6                                        |                   | 1                |                               | 7              |
| Sand, gravel, rock      |                                          | 59                |                  |                               | 59             |
| Miscellaneous           |                                          | 213               | 7                |                               | 220            |
| Subtotal                | 2,733                                    | 308               | 134              | 0                             | 3,175          |
| Total Traffic           | 13,009                                   | 729               | 553              | 0                             | 14,291         |

TABLE 21 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## RICHMOND HARBOR

| Commodity Group            | Tons (1,000) | Origin                | Destination         |
|----------------------------|--------------|-----------------------|---------------------|
| <u>Foreign Exports</u>     |              |                       |                     |
| Petroleum Products         | 289          | Richmond              | Canada              |
| Iron & Steel Scrap         | 276          | Richmond              | Japan               |
| Chemicals                  | 45           | 42 Richmond           | Asia                |
|                            |              | 1 Richmond            | Australia           |
|                            |              | 1 Richmond            | Mexico              |
|                            |              | 1 Richmond            | Japan               |
| Primary Metals             | 2            | Richmond              | Japan               |
| Miscellaneous              | 47           | 16 Richmond           | Japan               |
|                            |              | 14 Richmond           | Far East            |
|                            |              | 17 Richmond           | Japan               |
| <u>Foreign Imports</u>     |              |                       |                     |
| Crude Petroleum            | 630          | 99 Canada             | Richmond            |
|                            |              | 531 Indonesia         | Richmond            |
| Gypsum, Limestone          | 111          | Mexico                | Richmond            |
| Metallic Ores              | 34           | South America         | Richmond            |
| Miscellaneous              | 130          | 28 Philippine Islands | Richmond            |
|                            |              | 29 Europe             | Richmond            |
|                            |              | 61 Japan              | Richmond            |
|                            |              | 12 Australia          | Richmond            |
| <u>Coastwise Shipments</u> |              |                       |                     |
| Petroleum Products         | 2,911        | 1,083 Richmond        | Pacific Northwest   |
|                            |              | 876 Richmond          | Hawaii              |
|                            |              | 536 Richmond          | Alaska              |
|                            |              | 357 Richmond          | Southern California |
|                            |              | 47 Richmond           | Gulf States         |
|                            |              | 12 Richmond           | Atlantic States     |
| Chemicals                  | 14           | 8 Richmond            | Atlantic States     |
|                            |              | 3 Richmond            | Gulf States         |
|                            |              | 2 Richmond            | Southern California |
|                            |              | 1 Richmond            | Pacific Northwest   |
| Miscellaneous              | 32           | Richmond              | Hawaii              |



TABLE 21 - COMMODITY ORIGINS AND DESTINATIONS, 1970

RICHMOND HARBOR  
(Continued)

| Commodity Group            | Tons (1,000) | Origin                             | Destination                    |
|----------------------------|--------------|------------------------------------|--------------------------------|
| <u>Coastwise Receipts</u>  |              |                                    |                                |
| Crude Petroleum            | 4,330        | 3,561 Southern California          | Richmond                       |
|                            |              | 704 Alaska                         | Richmond                       |
|                            |              | 65 Pacific Northwest               | Richmond                       |
| Petroleum Products         | 1,871        | 7 Hawaii                           | Richmond                       |
|                            |              | 11 Gulf States                     | Richmond                       |
|                            |              | 1,284 Southern California          | Richmond                       |
|                            |              | 275 Pacific Northwest              | Richmond                       |
|                            |              | 294 Alaska                         | Richmond                       |
| Chemicals                  | 162          | 7 Hawaii                           | Richmond                       |
|                            |              | 69 Gulf States                     | Richmond                       |
|                            |              | 6 Pacific Northwest                | Richmond                       |
|                            |              | 80 Southern California             | Richmond                       |
| Molasses                   | 3            | Hawaii                             | Richmond                       |
| Miscellaneous              | 229          | 206 Atlantic States                | Richmond                       |
|                            |              | 23 Southern California             | Richmond                       |
| Subtotal, Ocean Commerce   | 11,116       |                                    |                                |
| <u>Internal Shipments</u>  |              |                                    |                                |
| Petroleum Products         | 2,237        | Richmond                           | San Francisco<br>Bay Terminals |
| Miscellaneous              | 184          | 177 Richmond                       | Waste dumped in sea            |
|                            |              | 7 Richmond                         | San Francisco<br>Bay Ports     |
| <u>Internal Receipts</u>   |              |                                    |                                |
| Petroleum Products         | 415          | San Francisco Bay<br>Oil Terminals | Richmond                       |
| Crude Petroleum            | 72           | Suisun Bay                         | Richmond                       |
| Sugar                      | 126          | Carquinez Strait                   | Richmond                       |
| Molasses                   | 3            | Carquinez Strait                   | Richmond                       |
| Building Cement            | 36           | Redwood City                       | Richmond                       |
| Basic Chemicals            | 7            | Pittsburg                          | Richmond                       |
| Sand, Gravel, Rock         | 59           | Suisun Bay                         | Richmond                       |
| Miscellaneous              | 36           | Sacramento Valley                  | Richmond                       |
| Subtotal, Internal Traffic | 3,175        |                                    |                                |
| TOTAL TRAFFIC              | 14,291       |                                    |                                |

## 10. SAN PABLO AND MARE ISLAND STRAIT

This reach comprises an area extending from Point San Pablo to Carquinez Strait. It is characterized by numerous private terminals such as Bethlehem Steel Company and Hercules Company at Pinole Point, Sequoia Oil Company at Rodeo, Union Oil Company at Oleum, Hamilton Field Dock, Mare Island Naval Shipyard, Sperry Flour Company, private yacht clubs, and other terminals.

a. General Trends Prior to 1950. The general inaccessibility of most of the San Pablo Bay portion of this reach retarded development except at the most favorable locations. Nevertheless, substantial quantities of petroleum products, grain and lumber did move through the area to points above. Naval traffic to Mare Island Naval Shipyard has been important as well as local traffic along Mare Island Strait.

b. Historic Commodity Movement, 1950-1970. Tonnage data by major commodity groups are shown in Table 22 for the 20-year period, 1950-1970, by 5-year intervals. While overall ocean commerce in 1970 shows a significant increase over 1960 and 1965, it is not much different than it was in 1950. Foreign commerce has increased significantly; however, coastwise commerce, although up materially from 1960 and 1965, due to increased receipts of petroleum, is about the same as it was in 1955. Internal traffic appears to be off somewhat; however, judging by past records, this type of traffic appears to be quite erratic. Dollar values for foreign movements over this period are shown on Table 23.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for the years selected are summarized on

Table 24. The importance of petroleum is clearly evident.

d. Commodity Origins and Destinations, 1970. Presented in Table 25 is a summary of the origins and destinations of the various commodity groups for year 1970.

Table 22  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SAN PABLO BAY AND MARE ISLAND STRAIT  
(Thousands of short tons)

| Commodity Group            | 1950       | 1955      | 1960      | 1965      | 1970      |
|----------------------------|------------|-----------|-----------|-----------|-----------|
| <u>Foreign Exports</u>     |            |           |           |           |           |
| Petroleum products         | <u>119</u> | <u>16</u> | <u>7</u>  | <u>68</u> | <u>10</u> |
| Subtotal, exports          | 119        | 16        | 7         | 68        | 10        |
| <u>Foreign Imports</u>     |            |           |           |           |           |
| Crude petroleum            | 0          | 25        | 0         | 0         | 770       |
| Petroleum products         | 0          | 0         | 0         | 0         | 12        |
| Miscellaneous              | <u>0</u>   | <u>1</u>  | <u>0</u>  | <u>0</u>  | <u>0</u>  |
| Subtotal, imports          | 0          | 26        | 0         | 0         | 782       |
| Total, Foreign Commerce    | 119        | 42        | 7         | 68        | 792       |
| <u>Coastwise Shipments</u> |            |           |           |           |           |
| Petroleum products         | 1,524      | 1,539     | 1,537     | 1,560     | 1,959     |
| Chemicals                  | 0          | 0         | 0         | 9         | 0         |
| Crude petroleum            | 13         | 2         | 0         | 0         | 0         |
| Miscellaneous              | <u>0</u>   | <u>0</u>  | <u>13</u> | <u>0</u>  | <u>0</u>  |
| Subtotal, shipments        | 1,537      | 1,541     | 1,550     | 1,569     | 1,959     |
| <u>Coastwise Receipts</u>  |            |           |           |           |           |
| Petroleum products         | 265        | 884       | 252       | 260       | 294       |
| Crude petroleum            | 2,526      | 890       | 16        | 85        | 1,399     |
| Miscellaneous              | <u>8</u>   | <u>0</u>  | <u>0</u>  | <u>0</u>  | <u>5</u>  |
| Subtotal, receipts         | 2,799      | 1,774     | 268       | 345       | 1,698     |
| Total, Coastwise Commerce  | 4,336      | 3,315     | 1,818     | 1,914     | 3,657     |
| Total, Ocean Commerce      | 4,455      | 3,357     | 1,825     | 1,982     | 4,449     |

Table 22  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SAN PABLO BAY AND MARE ISLAND STRAIT  
(Thousands of short tons)

| Commodity Group                                            | 1950      | 1955      | 1960      | 1965      | 1970     |
|------------------------------------------------------------|-----------|-----------|-----------|-----------|----------|
| <u>Internal Shipments</u>                                  |           |           |           |           |          |
| Petroleum products                                         | 758       | 894       | 713       | 860       | 525      |
| Miscellaneous                                              | <u>4</u>  | <u>6</u>  | <u>0</u>  | <u>0</u>  | <u>0</u> |
| Subtotal, shipments                                        | 762       | 900       | 713       | 860       | 525      |
| <u>Internal Receipts</u>                                   |           |           |           |           |          |
| Petroleum products                                         | 43        | 107       | 0         | 51        | 78       |
| Crude petroleum                                            | 0         | 0         | 18        | 0         | 31       |
| Miscellaneous                                              | <u>11</u> | <u>51</u> | <u>66</u> | <u>16</u> | <u>1</u> |
| Subtotal, receipts                                         | 54        | 158       | 84        | 67        | 110      |
| Total, Internal Commerce                                   | 816       | 1,058     | 797       | 927       | 635      |
| TOTAL ALL TRAFFIC, SAN PABLO<br>BAY AND MARE ISLAND STRAIT | 5,271     | 4,415     | 2,622     | 2,909     | 5,084    |



Table 23  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

SAN PABLO BAY AND MARE ISLAND STRAIT

| Commodity Group         | 1950    | 1955  | 1960 | 1965  | 1970     |
|-------------------------|---------|-------|------|-------|----------|
| <u>Foreign Exports</u>  |         |       |      |       |          |
| Petroleum products      | \$3,223 | \$143 | \$87 | \$683 | \$ 253   |
| Subtotal, exports       | \$3,223 | \$143 | \$87 | \$683 | \$ 253   |
| <u>Foreign Imports</u>  |         |       |      |       |          |
| Crude petroleum         | \$ 0    | \$359 | \$ 0 | \$ 0  | \$10,723 |
| Petroleum products      | 0       | 0     | 0    | 0     | 1        |
| Miscellaneous           | 0       | 1     | 0    | 0     | 0        |
| Subtotal, imports       | \$ 0    | \$360 | \$ 0 | \$ 0  | \$10,724 |
| Total, Foreign Commerce | \$3,223 | \$503 | \$87 | \$683 | \$10,977 |

Table 24

Categories of Commodity Movement, 1960, 1965, and 1970

SAN PABLO BAY AND MARE ISLAND STRAIT

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& LASH Cargo | Total<br>Cargo |
| 1960                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 16                                       |                   |                  |                               | 16             |
| Petroleum products      | 1,796                                    |                   |                  |                               | 1,796          |
| Miscellaneous           |                                          |                   | 13               |                               | 13             |
| Subtotal                | 1,812                                    | 0                 | 13               | 0                             | 1,825          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Crude petroleum         | 18                                       |                   |                  |                               | 18             |
| Petroleum products      | 713                                      |                   |                  |                               | 713            |
| Miscellaneous           |                                          |                   | 66               |                               | 66             |
| Subtotal                | 731                                      | 0                 | 66               | 0                             | 797            |
| <u>Total Traffic</u>    | 2,543                                    | 0                 | 79               | 0                             | 2,622          |

Table 24

## Categories of Commodity Movement, 1960, 1965, and 1970

## SAN PABLO BAY AND MARE ISLAND STRAIT

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                |                 |                            |                 |
|-------------------------|------------------------------------------|----------------|-----------------|----------------------------|-----------------|
|                         | Petroleum & Liquid Bulk                  | Dry Bulk Cargo | General Cargo   | Containerized & LASH Cargo | Total Cargo     |
| 1965                    |                                          |                |                 |                            |                 |
| <u>Ocean Commerce</u>   |                                          |                |                 |                            |                 |
| Crude petroleum         | 85                                       |                |                 |                            | 85              |
| Petroleum products      | 1,888                                    |                |                 |                            | 1,888           |
| Chemicals               |                                          |                | $\frac{9}{9}$   |                            | $\frac{9}{9}$   |
| Subtotal                | 1,973                                    | 0              | 9               | 0                          | 1,982           |
| <u>Internal Traffic</u> |                                          |                |                 |                            |                 |
| Crude petroleum         |                                          |                |                 |                            | 0               |
| Petroleum products      | 911                                      |                |                 |                            | 911             |
| Miscellaneous           |                                          |                | $\frac{16}{16}$ |                            | $\frac{16}{16}$ |
| Subtotal                | 911                                      | 0              | 16              |                            | 927             |
| <u>Total Traffic</u>    | 2,884                                    | 0              | 25              | 0                          | 2,909           |

Table 24

## Categories of Commodity Movement, 1960, 1965 and 1970

## SAN PABLO BAY AND MARE ISLAND STRAIT

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1970                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 2,169                                    |                   |                  |                               | 2,169          |
| Petroleum products      | 2,275                                    |                   |                  |                               | 2,275          |
| Miscellaneous           |                                          |                   | 5                |                               | 5              |
| Subtotal                | 4,444                                    | 0                 | 5                | 0                             | 4,449          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Crude petroleum         | 31                                       |                   |                  |                               | 31             |
| Petroleum products      | 603                                      |                   |                  |                               | 603            |
| Miscellaneous           |                                          |                   | 1                |                               | 1              |
| Subtotal                | 634                                      | 0                 | 1                | 0                             | 635            |
| <u>Total Traffic</u>    | 5,078                                    | 0                 | 6                | 0                             | 5,084          |

TABLE 25 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## SAN PABLO BAY AND MARE ISLAND STRAIT

| Commodity Group            | Tons (1,000) | Origin                     | Destination                |
|----------------------------|--------------|----------------------------|----------------------------|
| <u>Foreign Exports</u>     |              |                            |                            |
| Petroleum Products         | 10           | Oleum-Rodeo                | Far East                   |
| <u>Foreign Imports</u>     |              |                            |                            |
| Crude Petroleum            | 770          | 254 Indonesia              | Oleum-Rodeo                |
|                            |              | 472 South America          | Oleum-Rodeo                |
|                            |              | 44 Persian Gulf            | Oleum-Rodeo                |
| Petroleum Products         | 12           | Japan                      | Oleum-Rodeo                |
| <u>Coastwise Shipments</u> |              |                            |                            |
| Petroleum Products         | 1,959        | 960 Oleum-Rodeo            | Southern California        |
|                            |              | 179 Oleum-Rodeo            | Alaska                     |
|                            |              | 804 Oleum-Rodeo            | Pacific Northwest          |
|                            |              | 16 Oleum-Rodeo             | Hawaii                     |
| <u>Coastwise Receipts</u>  |              |                            |                            |
| Crude Petroleum            | 1,399        | 18 Southern California     | Oleum-Rodeo                |
|                            |              | 1,381 Alaska               | Oleum-Rodeo                |
| Petroleum Products         | 294          | Southern California        | Oleum-Rodeo                |
| Miscellaneous              | 5            | Southern California        | Oleum-Rodeo                |
| Subtotal, Ocean Commerce   | 4,449        |                            |                            |
| <u>Internal Shipments</u>  |              |                            |                            |
| Petroleum Products         | 525          | Oleum-Rodeo                | San Francisco<br>Bay Ports |
| <u>Internal Receipts</u>   |              |                            |                            |
| Petroleum Products         | 78           | San Francisco<br>Bay Ports | Oleum-Rodeo                |
| Crude Petroleum            | 31           | San Francisco<br>Bay Ports | Oleum-Rodeo                |
| Miscellaneous              | 1            | San Francisco              | Oleum-Rodeo                |
| Subtotal, Internal Traffic | 635          |                            |                            |
| TOTAL TRAFFIC              | 5,084        |                            |                            |



## 11. CARQUINEZ STRAIT

This rather short stretch of waterway connects San Pablo Bay with Suisun Bay. There are a number of important private terminals in this reach including the American Smelting and Refinery Company at Selby, C&H Sugar Refinery at Crockett, Shell Oil Company at Martinez, Phillips Petroleum at Martinez, and Humble Oil Company at Benicia.

a. General Trends Prior to 1950. For many years the smelter at Shelby, the sugar refinery at Crockett, and the oil terminals at Martinez experienced steady growth and development; although relatively recently, there appears to be a reduction in non-ferrous ores. At one time there was significant ferry movement of cars and passengers across the Strait. Port Costa, near Martinez, was a leading grain terminal in the days when grain was a leading export commodity. At present, only nominal amounts of grain are shipped from Port Costa.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown in Table 26 for the 20-year period, 1950-1970, by 5-year intervals. Total ocean commerce has showed substantial increases over the 20-year period due to increase in coastwise receipts of petroleum. Total foreign commerce is down somewhat due to reduction in imports of petroleum. Coastwise trade is up dramatically due to increase in shipments and receipts of petroleum products. Internal traffic is also up substantially through 1965, but has declined in 1970. Dollar values for the foreign movements over this period are shown in Table 27.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic

for the four categories of traffic for the years selected are summarized on Table 28. Petroleum products completely dominate the categories of traffic in this reach, as in San Pablo Bay and Mare Island Strait.

d. Commodity Origins and Destinations, 1970. Presented in Table 29 is a summary of the origin and destination of the various commodity groups for year 1970.

Table 26  
Waterborne Commerce Tonnage by Commodities, 1950-1970

CARQUINEZ STRAIT  
(Thousands of short tons)

| Commodity Group            | 1950     | 1955     | 1960     | 1965     | 1970      |
|----------------------------|----------|----------|----------|----------|-----------|
| <u>Foreign Exports</u>     |          |          |          |          |           |
| Petroleum products         | 60       | 129      | 418      | 14       | 380       |
| Crude petroleum            | 216      | 0        | 30       | 0        | 0         |
| Non-ferrous ores           | 0        | 16       | 3        | 0        | 0         |
| Miscellaneous              | <u>1</u> | <u>0</u> | <u>1</u> | <u>9</u> | <u>20</u> |
| Subtotal, exports          | 277      | 145      | 452      | 23       | 400       |
| <u>Foreign Imports</u>     |          |          |          |          |           |
| Crude petroleum            | 76       | 1,048    | 1,529    | 2,130    | 1,549     |
| Petroleum products         | 0        | 0        | 118      | 430      | 274       |
| Sugar                      | 56       | 0        | 17       | 22       | 106       |
| Non-ferrous ores           | 48       | 89       | 100      | 22       | 25        |
| Miscellaneous              | <u>3</u> | <u>0</u> | <u>0</u> | <u>3</u> | <u>15</u> |
| Subtotal, imports          | 183      | 1,137    | 1,764    | 2,607    | 1,969     |
| Total, Foreign Commerce    | 460      | 1,282    | 2,216    | 2,630    | 2,369     |
| <u>Coastwise Shipments</u> |          |          |          |          |           |
| Crude petroleum            | 0        | 15       | 90       | 160      | 26        |
| Petroleum products         | 2,245    | 2,290    | 1,493    | 1,460    | 2,423     |
| Non-ferrous ores           | 2        | 14       | 13       | 0        | 0         |
| Iron and steel scrap       | 0        | 1        | 0        | 0        | 0         |
| Chemicals                  | 0        | 6        | 15       | 25       | 12        |
| Miscellaneous              | <u>0</u> | <u>0</u> | <u>1</u> | <u>3</u> | <u>2</u>  |
| Subtotal, shipments        | 2,247    | 2,326    | 1,612    | 1,648    | 2,463     |

Table 26  
Waterborne Commerce Tonnage by Commodities, 1950-1970

CARQUINEZ STRAIT  
(Thousands of short tons)

| Commodity Group                        | 1950      | 1955      | 1960      | 1965      | 1970      |
|----------------------------------------|-----------|-----------|-----------|-----------|-----------|
| <u>Coastwise Receipts</u>              |           |           |           |           |           |
| Crude petroleum                        | 392       | 1,205     | 254       | 4         | 5,348     |
| Petroleum products                     | 185       | 228       | 955       | 2,050     | 833       |
| Sugar                                  | 486       | 696       | 689       | 724       | 645       |
| Molasses                               | 0         | 38        | 11        | 103       | 46        |
| Chemicals                              | 0         | 1         | 0         | 4         | 0         |
| Miscellaneous                          | <u>2</u>  | <u>0</u>  | <u>11</u> | <u>2</u>  | <u>2</u>  |
| Subtotal, receipts                     | 1,065     | 2,168     | 1,920     | 2,887     | 6,874     |
| Total, Coastwise Commerce              | 3,312     | 4,494     | 3,532     | 4,535     | 9,337     |
| Total, Ocean Commerce                  | 3,772     | 5,776     | 5,748     | 7,165     | 11,706    |
| <u>Internal Shipments</u>              |           |           |           |           |           |
| Petroleum products                     | 1,496     | 2,444     | 2,066     | 2,980     | 1,464     |
| Sugar                                  | 253       | 260       | 263       | 290       | 201       |
| Molasses                               | 0         | 38        | 0         | 41        | 60        |
| Miscellaneous                          | <u>3</u>  | <u>3</u>  | <u>0</u>  | <u>25</u> | <u>48</u> |
| Subtotal, shipments                    | 1,752     | 2,745     | 2,329     | 3,336     | 1,773     |
| <u>Internal Receipts</u>               |           |           |           |           |           |
| Petroleum products                     | 15        | 62        | 126       | 190       | 487       |
| Miscellaneous                          | <u>12</u> | <u>12</u> | <u>4</u>  | <u>24</u> | <u>23</u> |
| Subtotal, receipts                     | 27        | 74        | 130       | 214       | 510       |
| Total, Internal Commerce               | 1,779     | 2,819     | 2,459     | 3,550     | 2,283     |
| TOTAL ALL TRAFFIC,<br>CARQUINEZ STRAIT | 5,551     | 8,595     | 8,207     | 10,715    | 13,989    |

Table 27  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

CARQUINEZ STRAIT

| Commodity Group         | 1950     | 1955     | 1960     | 1965     | 1970     |
|-------------------------|----------|----------|----------|----------|----------|
| <u>Foreign Exports</u>  |          |          |          |          |          |
| Petroleum products      | \$ 1,625 | \$ 1,789 | \$14,477 | \$ 219   | \$ 3,994 |
| Crude petroleum         | 13,198   | 0        | 114      | 0        | 0        |
| Non-ferrous ores        | 0        | 127      | 641      | 0        | 0        |
| Miscellaneous           | 308      | 0        | 1        | 3,674    | 463      |
| Subtotal, exports       | \$15,131 | \$ 1,916 | \$15,233 | \$ 3,893 | \$ 4,457 |
| <u>Foreign Imports</u>  |          |          |          |          |          |
| Crude petroleum         | \$ 60*   | \$15,041 | \$17,950 | \$27,770 | \$19,507 |
| Petroleum products      | 0        | 0        | 1,691    | 5,647    | 4,995    |
| Sugar                   | 35       | 0        | 1,754    | 1,182    | 16,255   |
| Non-ferrous ores        | 5,029    | 2,492    | 5,821    | 2,650    | 6,589    |
| Miscellaneous           | 1        | 0        | 157      | 1,461    | 3,750    |
| Subtotal, imports       | \$ 5,125 | \$17,533 | \$27,373 | \$38,710 | \$51,096 |
| Total, Foreign Commerce | \$20,256 | \$19,449 | \$42,606 | \$42,603 | \$55,553 |

\* Customs district total dollar value of petroleum products limits this.  
Some error exists.



Table 28

## Categories of Commodity Movement, 1960, 1965 and 1970

## CARQUINEZ STRAIT

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1960                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 1,903                                    |                   |                  |                               | 1,903          |
| Petroleum products      | 2,984                                    |                   |                  |                               | 2,984          |
| Nonferrous ores         |                                          | 116               |                  |                               | 116            |
| Sugar                   |                                          | 706               |                  |                               | 706            |
| Molasses                | 11                                       |                   |                  |                               | 11             |
| Chemicals               |                                          |                   | 15               |                               | 15             |
| Miscellaneous           |                                          |                   | 13               |                               | 13             |
| Subtotal                | 4,898                                    | 822               | 28               | 0                             | 5,748          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 2,192                                    |                   |                  |                               | 2,192          |
| Sugar                   |                                          |                   | 263              |                               | 263            |
| Miscellaneous           |                                          |                   | 4                |                               | 4              |
| Subtotal                | 2,192                                    | 0                 | 267              | 0                             | 2,459          |
| <u>Total Traffic</u>    | 7,090                                    | 822               | 295              | 0                             | 8,207          |

Table 28

## Categories of Commodity Movement, 1960, 1965 and 1970

## CARQUINEZ STRAIT

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1965                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 2,294                                    |                   |                  |                               | 2,294          |
| Petroleum products      | 3,954                                    |                   |                  |                               | 3,954          |
| Nonferrous ores         |                                          | 22                |                  |                               | 22             |
| Sugar                   |                                          | 746               |                  |                               | 746            |
| Molasses                | 103                                      |                   |                  |                               | 103            |
| Chemicals               |                                          |                   | 29               |                               | 29             |
| Miscellaneous           |                                          |                   | 17               |                               | 17             |
| Subtotal                | 6,351                                    | 768               | 46               | 0                             | 7,165          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 3,170                                    |                   |                  |                               | 3,170          |
| Sugar                   |                                          |                   | 290              |                               | 290            |
| Molasses                | 41                                       |                   |                  |                               | 41             |
| Miscellaneous           |                                          |                   | 49               |                               | 49             |
| Subtotal                | 3,211                                    | 0                 | 339              | 0                             | 3,550          |
| <u>Total Traffic</u>    | 9,562                                    | 768               | 385              | 0                             | 10,715         |

Table 28

## Categories of Commodity Movement, 1960, 1965 and 1970

## CARQUINEZ STRAIT

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1970                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 6,923                                    |                   |                  |                               | 6,923          |
| Petroleum products      | 3,910                                    |                   |                  |                               | 3,910          |
| Nonferrous ores         |                                          | 25                |                  |                               | 25             |
| Sugar                   |                                          | 751               |                  |                               | 751            |
| Molasses                | 46                                       |                   |                  |                               | 46             |
| Chemicals               |                                          |                   | 12               |                               | 12             |
| Miscellaneous           |                                          |                   | 39               |                               | 39             |
| Subtotal                | 10,879                                   | 776               | 51               | 0                             | 11,706         |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 1,951                                    |                   |                  |                               | 1,951          |
| Sugar                   |                                          |                   | 201              |                               | 201            |
| Molasses                | 60                                       |                   |                  |                               | 60             |
| Miscellaneous           |                                          |                   | 71               |                               | 71             |
| Subtotal                | 2,011                                    | 0                 | 272              | 0                             | 2,283          |
| <u>Total Traffic</u>    | 12,890                                   | 776               | 323              | 0                             | 13,989         |

TABLE 29 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## CARQUINEZ STRAIT

| Commodity Group            | Tons (1,000) | Origin                    | Destination         |
|----------------------------|--------------|---------------------------|---------------------|
| <u>Foreign Exports</u>     |              |                           |                     |
| Petroleum Products         | 380          | Carquinez Strait          | Japan, Far East     |
| Miscellaneous              | 20           | Carquinez Strait          | Japan               |
| <u>Foreign Imports</u>     |              |                           |                     |
| Crude Petroleum            | 1,549        | 42 Canada                 | Carquinez Strait    |
|                            |              | 146 Malaysia              | Carquinez Strait    |
|                            |              | 1,361 Persian Gulf        | Carquinez Strait    |
| Petroleum Products         | 274          | Caribbean                 | Carquinez Strait    |
| Sugar                      | 106          | Philippine Islands        | Crockett            |
| Non-ferrous Ores           | 25           | South America             | Carquinez Strait    |
| Miscellaneous              | 15           | Japan                     | Benicia             |
| <u>Coastwise Shipments</u> |              |                           |                     |
| Crude Petroleum            | 26           | 13 Carquinez Strait       | Southern California |
|                            |              | 13 Carquinez Strait       | Hawaii              |
| Petroleum Products         | 2,423        | 650 Carquinez Strait      | Southern California |
|                            |              | 1,400 Carquinez Strait    | Pacific Northwest   |
|                            |              | 264 Carquinez Strait      | Hawaii              |
|                            |              | 73 Carquinez Strait       | Gulf States         |
|                            |              | 36 Carquinez Strait       | Atlantic Coast      |
| Chemicals                  | 12           | 2 Carquinez Strait        | Pacific Northwest   |
|                            |              | 4 Carquinez Strait        | Atlantic Coast      |
|                            |              | 6 Carquinez Strait        | Gulf States         |
| Miscellaneous              | 2            | Carquinez Strait          | Southern California |
| <u>Coastwise Receipts</u>  |              |                           |                     |
| Crude Petroleum            | 5,348        | 2,769 Alaska              | Carquinez Strait    |
|                            |              | 2,345 Southern California | Carquinez Strait    |
|                            |              | 234 Pacific Northwest     | Carquinez Strait    |
| Petroleum Products         | 833          | 365 Pacific Northwest     | Carquinez Strait    |
|                            |              | 9 Alaska                  | Carquinez Strait    |
|                            |              | 459 Southern California   | Carquinez Strait    |
| Sugar                      | 645          | Hawaii                    | Carquinez Strait    |
| Molasses                   | 46           | Hawaii                    | Carquinez Strait    |
| Miscellaneous              | 2            | Gulf States               | Carquinez Strait    |
| Subtotal, Ocean Commerce   | 11,706       |                           |                     |

Continued

TABLE 29 - COMMODITY ORIGINS AND DESTINATIONS, 1970

CARQUINEZ STRAIT  
(Continued)

| Commodity Group            | Tons (1,000) | Origin                     | Destination                |
|----------------------------|--------------|----------------------------|----------------------------|
| <u>Internal Shipments</u>  |              |                            |                            |
| Petroleum Products         | 1,464        | Carquinez Strait           | San Francisco<br>Bay Ports |
| Sugar                      | 201          | 75 Carquinez Strait        | Oakland                    |
|                            |              | 126 Carquinez Strait       | Richmond                   |
| Molasses                   | 60           | Carquinez Strait           | Stockton                   |
| Miscellaneous              | 48           | Carquinez Strait           | Open Sea                   |
| <u>Internal Receipts</u>   |              |                            |                            |
| Petroleum Products         | 487          | San Francisco<br>Bay Ports | Carquinez Strait           |
| Miscellaneous              | <u>23</u>    | Sacramento                 | Carquinez Strait           |
| Subtotal, Internal Traffic | 2,283        |                            |                            |
| TOTAL TRAFFIC              | 13,989       |                            |                            |



## 12. SUISUN BAY CHANNEL

The Suisun Bay Channel extends from the upper end of Carquinez Strait near Martinez about 13 miles to the mouth of New York Slough near Pittsburgh. The primary terminals in this area is the petroleum terminal at Avon, and the naval ammunition wharf at Port Chicago (traffic for the latter is not included in this analysis).

a. General Trends Prior to 1950. Local traffic as well as ferry passengers and rail car movement once constituted significant cargo. This declined while movement of petroleum products increased.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown in Table 30 for the 20-year period, 1950-1970, by 5-year intervals. Overall ocean commerce reached a peak about 1960 and has declined significantly since then. Foreign commerce, although up in 1970, is down substantially due to reduction in petroleum products. Internal traffic reached a peak about 1965, but has declined since that date. Dollar value of foreign movements over the period are shown in Table 31.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for the years selected are summarized in Table 32. As with San Pablo Bay and Carquinez Strait, petroleum products completely dominate the categories of traffic in this reach.

d. Commodity Origins and Destinations, 1970. Presented in Table 33 is a summary of the origins and destinations of the various commodity groups for year 1970.

Table 30  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUISUN BAY CHANNEL  
(Thousands of short tons)

| Commodity Group            | 1950     | 1955      | 1960      | 1965      | 1970     |
|----------------------------|----------|-----------|-----------|-----------|----------|
| <u>Foreign Exports</u>     |          |           |           |           |          |
| Crude petroleum            | 32       | 29        | 11        | 32        | 53       |
| Petroleum products         | 7        | 80        | 65        | 9         | 37       |
| Department of Defense      |          |           |           |           |          |
| Controlled cargo           | 0        | 12        | 8         | 48        | 0        |
| Miscellaneous              | <u>0</u> | <u>2</u>  | <u>0</u>  | <u>0</u>  | <u>1</u> |
| Subtotal, exports          | 39       | 123       | 84        | 89        | 91       |
| <u>Foreign Imports</u>     |          |           |           |           |          |
| Crude petroleum            | 0        | 406       | 152       | 65        | 270      |
| Petroleum products         | 0        | 0         | 70        | 40        | 0        |
| Miscellaneous              | <u>0</u> | <u>2</u>  | <u>0</u>  | <u>0</u>  | <u>0</u> |
| Subtotal, imports          | 0        | 408       | 222       | 105       | 270      |
| Total, Foreign Commerce    | 39       | 531       | 306       | 194       | 361      |
| <u>Coastwise Shipments</u> |          |           |           |           |          |
| Petroleum products         | 770      | 1,148     | 1,349     | 480       | 433      |
| Crude petroleum            | 0        | 0         | 35        | 0         | 0        |
| Chemicals                  | <u>0</u> | <u>21</u> | <u>30</u> | <u>49</u> | <u>0</u> |
| Subtotal, shipments        | 770      | 1,169     | 1,414     | 529       | 433      |
| <u>Coastwise Receipts</u>  |          |           |           |           |          |
| Crude petroleum            | 922      | 976       | 1,309     | 500       | 618      |
| Petroleum products         | 545      | 229       | 302       | 290       | 67       |
| Chemicals                  | <u>0</u> | <u>0</u>  | <u>0</u>  | <u>5</u>  | <u>2</u> |
| Subtotal, receipts         | 1,467    | 1,205     | 1,611     | 795       | 687      |
| Total, Coastwise Commerce  | 2,237    | 2,374     | 3,025     | 1,324     | 1,120    |
| Total, Ocean Commerce      | 2,276    | 2,905     | 3,331     | 1,518     | 1,481    |

Table 30  
Waterborne Commerce Tonnage by Commodities, 1950-1970

SUISUN BAY CHANNEL  
(Thousands of short tons)

| Commodity Group                          | 1950     | 1955     | 1960     | 1965     | 1970      |
|------------------------------------------|----------|----------|----------|----------|-----------|
| <u>Internal Shipments</u>                |          |          |          |          |           |
| Petroleum products                       | 717      | 881      | 1,047    | 1,080    | 452       |
| Crude petroleum                          | 0        | 0        | 1        | 0        | 51        |
| Sand and gravel                          | 52       | 82       | 77       | 84       | 207       |
| Miscellaneous                            | <u>0</u> | <u>0</u> | <u>0</u> | <u>3</u> | <u>0</u>  |
| Subtotal, shipments                      | 769      | 963      | 1,125    | 1,167    | 710       |
| <u>Internal Receipts</u>                 |          |          |          |          |           |
| Crushed and broken stone                 | 2        | 6        | 7        | 4        | 0         |
| Crude petroleum                          | 0        | 0        | 253      | 240      | 144       |
| Petroleum products                       | 28       | 17       | 34       | 22       | 12        |
| Miscellaneous                            | <u>0</u> | <u>0</u> | <u>1</u> | <u>0</u> | <u>13</u> |
| Subtotal, receipts                       | 30       | 23       | 295      | 266      | 169       |
| Total, Internal Commerce                 | 799      | 986      | 1,420    | 1,433    | 879       |
| TOTAL ALL TRAFFIC, SUISUN BAY<br>CHANNEL | 3,075    | 3,891    | 4,751    | 2,951    | 2,360     |

Table 31  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

SUISUN BAY CHANNEL

| Commodity Group         | 1950     | 1955       | 1960     | 1965     | 1970       |
|-------------------------|----------|------------|----------|----------|------------|
| <u>Foreign Exports</u>  |          |            |          |          |            |
| Crude petroleum         | \$1,955  | \$ 417     | \$ 320   | \$ 493   | \$ 872     |
| Petroleum products      | 190      | 1,152      | 1,020    | 658      | 676        |
| Miscellaneous           | <u>0</u> | <u>483</u> | <u>0</u> | <u>0</u> | <u>133</u> |
| Subtotal, exports       | \$2,145  | \$2,052    | \$1,340  | \$1,151  | \$1,681    |
| <u>Foreign Imports</u>  |          |            |          |          |            |
| Crude petroleum         | \$ 0     | \$5,827    | \$1,784  | \$ 913   | \$4,049    |
| Petroleum products      | 0        | 0          | 1,003    | 442      | 0          |
| Miscellaneous           | <u>0</u> | <u>345</u> | <u>0</u> | <u>0</u> | <u>0</u>   |
| Subtotal, imports       | \$ 0     | \$6,172    | \$2,787  | \$1,355  | \$4,049    |
| Total, Foreign Commerce | \$2,145  | \$8,224    | \$4,127  | \$2,506  | \$5,730    |

Table 32

Categories of Commodity Movement, 1960, 1965 and 1970

## SUISUN BAY CHANNEL

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1960                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 1,507                                    |                   |                  |                               | 1,507          |
| Petroleum products      | 1,786                                    |                   |                  |                               | 1,786          |
| Dept. of Defense        |                                          |                   | 8                |                               | 8              |
| Chemicals               |                                          |                   | 30               |                               | 30             |
| Subtotal                | 3,293                                    |                   | 38               | 0                             | 3,331          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Crude petroleum         | 254                                      |                   |                  |                               | 254            |
| Petroleum products      | 1,081                                    |                   |                  |                               | 1,081          |
| Sand, gravel, stone     |                                          | 84                |                  |                               | 84             |
| Miscellaneous           |                                          |                   | 1                |                               | 1              |
| Subtotal                | 1,335                                    | 84                | 1                |                               | 1,420          |
| <u>Total Traffic</u>    | 4,628                                    | 84                | 39               | 0                             | 4,751          |



Table 32

## Categories of Commodity Movement, 1960, 1965 and 1970

## SUISUN BAY CHANNEL

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1965                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 597                                      |                   |                  |                               | 597            |
| Petroleum products      | 810                                      |                   |                  |                               | 810            |
| Dept. of Defense        |                                          |                   | 48               |                               | 48             |
| Chemicals               | 5                                        |                   | 49               |                               | 54             |
| Miscellaneous           |                                          |                   | 9                |                               | 9              |
| Subtotal                | 1,412                                    | 0                 | 106              | 0                             | 1,518          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Crude petroleum         | 240                                      |                   |                  |                               | 240            |
| Petroleum products      | 1,102                                    |                   |                  |                               | 1,102          |
| Sand, gravel, stone     |                                          | 88                |                  |                               | 88             |
| Miscellaneous           |                                          |                   | 3                |                               | 3              |
| Subtotal                | 1,342                                    | 88                | 3                |                               | 1,433          |
| <u>Total Traffic</u>    | 2,754                                    | 88                | 109              | 0                             | 2,951          |

Table 32

Categories of Commodity Movement, 1960, 1965 and 1970

## SUISUN BAY CHANNEL

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1970                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Crude petroleum         | 941                                      |                   |                  |                               | 941            |
| Petroleum products      | 537                                      |                   |                  |                               | 537            |
| Chemicals               |                                          |                   | 2                |                               | 2              |
| Miscellaneous           |                                          |                   | <u>1</u>         |                               | <u>1</u>       |
| Subtotal                | 1,478                                    | 0                 | 3                | 0                             | 1,481          |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Crude petroleum         | 195                                      |                   |                  |                               | 195            |
| Petroleum products      | 464                                      |                   |                  |                               | 464            |
| Sand, gravel, stone     |                                          | 207               |                  |                               | 207            |
| Miscellaneous           |                                          |                   | <u>13</u>        |                               | <u>13</u>      |
| Subtotal                | 659                                      | 207               | 13               | 0                             | 879            |
| <u>Total Traffic</u>    | 2,137                                    | 207               | 16               | 0                             | 2,360          |

TABLE 33 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## SUISUN BAY CHANNEL

| Commodity Group            | Tons (1,000) | Origin                                                                              | Destination                                                                         |
|----------------------------|--------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <u>Foreign Exports</u>     |              |                                                                                     |                                                                                     |
| Crude Petroleum            | 53           | Suisun Bay                                                                          | Japan                                                                               |
| Petroleum Products         | 37           | Suisun Bay                                                                          | Far East                                                                            |
| Miscellaneous              | 1            | Suisun Bay                                                                          | Far East                                                                            |
| <u>Foreign Imports</u>     |              |                                                                                     |                                                                                     |
| Crude Petroleum            | 270          | 180 South America<br>90 Persian Gulf                                                | Suisun Bay<br>Suisun Bay                                                            |
| <u>Coastwise Shipments</u> |              |                                                                                     |                                                                                     |
| Petroleum Products         | 433          | 5 Suisun Bay<br>110 Suisun Bay<br>165 Suisun Bay<br>43 Suisun Bay<br>110 Suisun Bay | Alaska<br>Southern California<br>Pacific Northwest<br>Hawaii<br>Northern California |
| <u>Coastwise Receipts</u>  |              |                                                                                     |                                                                                     |
| Crude Petroleum            | 618          | 41 Alaska<br>577 Southern California                                                | Suisun Bay<br>Suisun Bay                                                            |
| Petroleum Products         | 67           | Southern California                                                                 | Suisun Bay                                                                          |
| Chemicals                  | 2            | Pacific Northwest                                                                   | Suisun Bay                                                                          |
| Subtotal, Ocean Commerce   | 1,481        |                                                                                     |                                                                                     |
| <u>Internal Shipments</u>  |              |                                                                                     |                                                                                     |
| Petroleum Products         | 452          | Suisun Bay                                                                          | San Francisco<br>Bay Ports                                                          |
| Crude Petroleum            | 51           | Suisun Bay                                                                          | Richmond                                                                            |
| Sand, Gravel, Rock         | 207          | Suisun Bay                                                                          | Oakland-Richmond                                                                    |
| <u>Internal Receipts</u>   |              |                                                                                     |                                                                                     |
| Crude Petroleum            | 144          | 16 Richmond<br>118 Other San Francisco<br>Bay Ports                                 | Suisun Bay<br>Suisun Bay                                                            |
| Petroleum Products         | 12           | Other San Francisco<br>Bay Ports                                                    | Suisun Bay                                                                          |
| Miscellaneous              | 13           | Other San Francisco<br>Bay Ports                                                    | Suisun Bay                                                                          |
| Subtotal, Internal Traffic | 879          |                                                                                     |                                                                                     |
| TOTAL TRAFFIC              | 2,360        |                                                                                     |                                                                                     |

### 13. LOWER SAN JOAQUIN RIVER

This reach of channel encompasses the area from the mouth of New York Slough to approximately the Antioch Bridge. This is the highly industrialized north shore of Contra Costa County. Historical statistics on waterborne commerce are obtained by subtracting the Port of Stockton data from the total San Joaquin River Project (which includes Port of Stockton).

a. General Trends Prior to 1950. A substantial part of the early traffic was local in nature, consisting of agricultural products, petroleum products, levee riprap material and the like. Several large industrial firms located in this area before and after World War II, but it was not until after the war that ocean commerce began to be significant.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown on Table 34 for the 20-year period, 1950-1970, by 5-year intervals. Ocean traffic appears to have peaked out about 1965, and then to have declined somewhat to 1970. The primary reason for this condition is the reduction in foreign imports since foreign exports as well as coastwise trade did not change materially between 1965 and 1970. Internal traffic appears to be on a steady increase. Dollar values for foreign movements for the period are shown on Table 35.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for the years selected are summarized in Table 36. The dry bulk cargo nature of this reach is evident from inspection of the data in the table.

d. Commodity Origins and Destinations, 1970. Presented in Table 37

is a summary of the origins and destinations of the various commodity groups for year 1970.



Table 34  
Waterborne Commerce Tonnage by Commodities, 1950-1970

LOWER SAN JOAQUIN RIVER  
(Thousands of short tons)

| Commodity Group                      | 1950     | 1955      | 1960     | 1965     | 1970     |
|--------------------------------------|----------|-----------|----------|----------|----------|
| <u>Foreign Exports</u>               |          |           |          |          |          |
| Petroleum coke                       | 0        | 0         | 0        | 366      | 448      |
| Metallic ores, non-metallic minerals | 0        | 0         | 0        | 510      | 476      |
| Chemicals                            | 0        | 0         | 12       | 27       | 0        |
| Petroleum products                   | 0        | 71        | 18       | 41       | 0        |
| Miscellaneous                        | <u>1</u> | <u>0</u>  | <u>0</u> | <u>7</u> | <u>0</u> |
| Subtotal, exports                    | 1        | 71        | 30       | 951      | 924      |
| <u>Foreign Imports</u>               |          |           |          |          |          |
| Pulp and paper products              | 0        | 0         | 279      | 412      | 75       |
| Gypsum, limestone                    | 0        | 0         | 153      | 162      | 85       |
| Non-ferrous ores                     | 0        | 0         | 0        | 13       | 30       |
| Petroleum products                   | 0        | 41        | 64       | 0        | 0        |
| Miscellaneous                        | <u>0</u> | <u>0</u>  | <u>2</u> | <u>1</u> | <u>0</u> |
| Subtotal, imports                    | 0        | 41        | 498      | 588      | 190      |
| Total, Foreign Commerce              | 1        | 112       | 528      | 1,539    | 1,114    |
| <u>Coastwise Shipments</u>           |          |           |          |          |          |
| Chemicals                            | 0        | 26        | 13       | 25       | 77       |
| Miscellaneous                        | <u>0</u> | <u>1</u>  | <u>0</u> | <u>0</u> | <u>9</u> |
| Subtotal, shipments                  | 0        | 27        | 13       | 25       | 86       |
| <u>Coastwise Receipts</u>            |          |           |          |          |          |
| Crude petroleum                      | 0        | 0         | 0        | 0        | 0        |
| Petroleum products                   | 0        | 40        | 218      | 141      | 64       |
| Chemicals                            | 0        | 5         | 30       | 53       | 70       |
| Miscellaneous                        | <u>0</u> | <u>16</u> | <u>0</u> | <u>0</u> | <u>0</u> |
| Subtotal, receipts                   | 0        | 61        | 248      | 194      | 134      |
| Total, Coastwise Commerce            | 0        | 88        | 261      | 219      | 220      |
| Total, Ocean Commerce                | 1        | 200       | 789      | 1,758    | 1,334    |

Table 34  
Waterborne Commerce Tonnage by Commodities, 1950-1970

LOWER SAN JOAQUIN RIVER  
(Thousands of short tons)

| Commodity Group           | 1950 | 1955 | 1960  | 1965  | 1970                |
|---------------------------|------|------|-------|-------|---------------------|
| <u>Internal Shipments</u> |      |      |       |       |                     |
| Sand & gravel             | 116  | 51   | 12    | 5     | 24                  |
| Chemicals                 | 0    | 0    | 0     | 6     | 8                   |
| Petroleum products        | 0    | 0    | 0     | 0     | 99                  |
| Miscellaneous             | 39   | 23   | 6     | 0     | 0                   |
| Subtotal                  | 155  | 74   | 18    | 11    | 131                 |
| <u>Internal Receipts</u>  |      |      |       |       |                     |
| Salt                      | 0    | 0    | 0     | 125   | 186                 |
| Chemicals                 | 1    | 0    | 0     | 0     | 0                   |
| Sand, gravel, & rock      | 66   | 46   | 19    | 5     | 0 <sup>2/</sup>     |
| Petroleum products        | 12   | 48   | 177   | 103   | 159                 |
| Miscellaneous             | 2    | 0    | 0     | 17    | 1                   |
| Subtotal                  | 81   | 94   | 196   | 250   | 346 <sup>2/</sup>   |
| Total, Internal Commerce  | 236  | 168  | 214   | 261   | 477 <sup>2/</sup>   |
| <u>TOTAL, ALL TRAFFIC</u> |      |      |       |       |                     |
| LOWER SAN JOAQUIN RIVER   | 237  | 368  | 1,003 | 2,019 | 1,811 <sup>2/</sup> |

<sup>2/</sup> Excludes 2,814,000 tons of sand used for freeway fill on Interstate 5.

Table 35  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

LOWER SAN JOAQUIN RIVER

| Commodity Group                      | 1950       | 1955     | 1960       | 1965       | 1970     |
|--------------------------------------|------------|----------|------------|------------|----------|
| <u>Foreign Exports</u>               |            |          |            |            |          |
| Petroleum coke                       | \$ 0       | \$ 0     | \$ 0       | \$ 3,846   | \$ 2,697 |
| Metallic ores, non-metallic minerals | 0          | 0        | 0          | 4,810      | 4,131    |
| Chemicals                            | 0          | 0        | 1,816      | 158        | 0        |
| Petroleum products                   | 0          | 409      | 240        | 835        | 0        |
| Miscellaneous                        | <u>205</u> | <u>0</u> | <u>0</u>   | <u>283</u> | <u>0</u> |
| Subtotal, exports                    | \$205      | \$409    | \$ 2,056   | \$ 9,932   | \$ 6,828 |
| <u>Foreign Imports</u>               |            |          |            |            |          |
| Pulp and paper products              | \$ 0       | \$ 0     | \$ 7,969   | \$10,168   | \$ 6,208 |
| Gypsum, limestone                    | 0          | 0        | 140        | 183        | 97       |
| Non-ferrous ores                     | 0          | 0        | 0          | 1,615      | 2,608    |
| Petroleum products                   | 0          | 588      | 917        | 0          | 0        |
| Miscellaneous                        | <u>0</u>   | <u>0</u> | <u>107</u> | <u>73</u>  | <u>0</u> |
| Subtotal, imports                    | \$ 0       | \$588    | \$ 9,133   | \$12,039   | \$ 8,913 |
| Total, Foreign Commerce              | \$205      | \$997    | \$11,189   | \$21,971   | \$15,741 |

Table 36

## Categories of Commodity Movement, 1960, 1965 and 1970

## LOWER SAN JOAQUIN RIVER

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1960                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Petroleum products      | 300                                      |                   |                  |                               | 300            |
| Chemicals               | 23                                       |                   | 32               |                               | 55             |
| Pulp & paper            | 279                                      |                   |                  |                               | 279            |
| Gypsum and limestone    |                                          | 153               |                  |                               | 153            |
| Miscellaneous           |                                          |                   | 2                |                               | 2              |
| Subtotal                | 602                                      | 153               | 34               | 0                             | 789            |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 177                                      |                   |                  |                               | 177            |
| Sand, gravel, rock      |                                          | 31                |                  |                               | 31             |
| Miscellaneous           |                                          |                   | 6                |                               | 6              |
| Subtotal                | 177                                      | 31                | 6                | 0                             | 214            |
| <u>Total Traffic</u>    | 779                                      | 184               | 40               | 0                             | 1,003          |

Table 36

Categories of Commodity Movement, 1960, 1965 and 1970

## LOWER SAN JOAQUIN RIVER

| COMMODITY<br>GROUP                      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-----------------------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1965                                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>                   |                                          |                   |                  |                               |                |
| Petroleum coke                          |                                          | 366               |                  |                               | 366            |
| Petroleum products                      | 182                                      |                   |                  |                               | 182            |
| Chemicals                               | 30                                       | 25                | 50               |                               | 105            |
| Pulp & paper                            | 412                                      |                   |                  |                               | 412            |
| Metallic ores, non<br>metallic-minerals |                                          | 510               |                  |                               | 510            |
| Non-ferrons ores                        |                                          | 13                |                  |                               | 13             |
| Gypsum, limestone                       |                                          | 162               |                  |                               | 162            |
| Miscellaneous                           |                                          |                   | 8                |                               | 8              |
| Subtotal                                | 624                                      | 1,076             | 58               | 0                             | 1,758          |
| <u>Internal Traffic</u>                 |                                          |                   |                  |                               |                |
| Petroleum products                      | 103                                      |                   |                  |                               | 103            |
| Sand, gravel, rock                      |                                          | 10                |                  |                               | 10             |
| Chemicals                               |                                          |                   | 6                |                               | 6              |
| Salt                                    |                                          | 125               |                  |                               | 125            |
| Miscellaneous                           |                                          |                   | 17               |                               | 17             |
| Subtotal                                | 103                                      | 135               | 23               | 0                             | 261            |
| <u>Total Traffic</u>                    | 727                                      | 1,211             | 81               | 0                             | 2,019          |



Table 36

## Categories of Commodity Movement, 1960, 1965 and 1970

## LOWER SAN JOAQUIN RIVER

| COMMODITY<br>GROUP                       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|------------------------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1970                                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>                    |                                          |                   |                  |                               |                |
| Petroleum coke                           |                                          | 448               |                  |                               | 448            |
| Petroleum products                       | 64                                       |                   |                  |                               | 64             |
| Chemicals                                | 108                                      |                   | 39               |                               | 147            |
| Pulp & paper                             | 70                                       |                   | 5                |                               | 75             |
| Metallic ores, non-<br>metallic minerals |                                          | 476               |                  |                               | 476            |
| Non-ferrous ores                         |                                          | 30                |                  |                               | 30             |
| Gypsum, limestone                        |                                          | 85                |                  |                               | 85             |
| Miscellaneous                            | 9                                        |                   |                  |                               | 9              |
| Subtotal                                 | 251                                      | 1,039             | 44               | 0                             | 1,334          |
| <u>Internal Traffic</u>                  |                                          |                   |                  |                               |                |
| Petroleum products                       | 258                                      |                   |                  |                               | 258            |
| Sand, gravel, rock <sup>1/</sup>         |                                          | 24                |                  |                               | 24             |
| Chemicals                                | 7                                        |                   | 1                |                               | 8              |
| Salt                                     |                                          | 186               |                  |                               | 186            |
| Miscellaneous                            |                                          |                   | 1                |                               | 1              |
| Subtotal                                 | 265                                      | 210               | 2                | 0                             | 477            |
| <u>Total Traffic</u>                     | 516                                      | 1,249             | 46               | 0                             | 1,811          |

<sup>1/</sup> Excludes 2,814,000 tons of sand used for freeway fill on Interstate 5.

TABLE 37 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## LOWER SAN JOAQUIN RIVER

| Commodity Group                         | Tons (1,000) | Origin                     | Destination         |
|-----------------------------------------|--------------|----------------------------|---------------------|
| <u>Foreign Exports</u>                  |              |                            |                     |
| Petroleum Coke                          | 448          | 80 Bay Area                | Japan               |
|                                         |              | 364 Bay Area               | Europe              |
| Metallic Ores                           | 476          | Nevada                     | Japan               |
| <u>Foreign Imports</u>                  |              |                            |                     |
| Pulp and Paper Products                 | 75           | British Columbia           | Pittsburg           |
| Gypsum, Limestone                       | 85           | Mexico                     | Pittsburg           |
| Non-Ferrous Ores                        | 30           | Australia                  | Pittsburg           |
| <u>Coastwise Shipments</u>              |              |                            |                     |
| Chemicals                               | 77           | Pittsburg                  | Gulf States         |
| Miscellaneous                           | 9            | Bay Area Refineries        | Hawaii              |
| <u>Coastwise Receipts</u>               |              |                            |                     |
| Petroleum Products                      | 64           | Los Angeles-<br>Long Beach | Pittsburg           |
| Chemicals                               | 70           | Gulf States                | Pittsburg           |
| Subtotal, Ocean Commerce                | 1,334        |                            |                     |
| <u>Internal Shipments</u> <sup>1/</sup> |              |                            |                     |
| Sand and Gravel                         | 24           | San Joaquin River          | Bay Area            |
| Chemicals                               | 8            | Pittsburg                  | Bay Area            |
| Petroleum Products                      | 99           | Pittsburg Area             | Bay Area Refineries |
| <u>Internal Receipts</u>                |              |                            |                     |
| Salt                                    | 186          | Napa River                 | Pittsburg           |
| Petroleum Products                      | 159          | Bay Area Refineries        | Pittsburg Area      |
| Miscellaneous                           | 1            | San Francisco              | Pittsburg           |
| Subtotal, Internal Traffic              | 477          |                            |                     |
| TOTAL TRAFFIC                           | 1,811        |                            |                     |

<sup>1/</sup> Excludes 2,814,000 tons sand used for freeway fill on Interstate 5.

#### 14. PORT OF STOCKTON

This is a part of the San Joaquin River Project. It includes the public terminal and Stockton elevators, a large privately-owned grain terminal.

a. General Trends Prior to 1950. The present deep-draft port stems from authorizations between 1910 and 1937 that eventually provided a channel 30 feet deep from the mouth of the river to Stockton. Prior to the time when deep-draft vessels called at Stockton, shallow-draft vessels plied the river providing service to terminals below and above Stockton. This river port goes back to the gold rush days when it served as a major supply center for the southern mines. Supplies of all kinds, as well as passengers, were carried on river boats. With the development of the valley, large amounts of grain and other agricultural products were barged to bay ports and general merchandise of all kinds continued to be the primary imports. Later, petroleum imports became important to meet the needs of automobiles and other petroleum users. Virtually all of the petroleum was supplied by barge shipments, even after the channel was improved for deep-draft vessels.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown in Table 38 for the 20-year period, 1950-1970, by 5-year intervals. From data in the table, it appears that total ocean commerce reached a peak about 1960 for both foreign and coastwise trade. The declines from 1960 to 1970 is due to the reduction in foreign iron ore shipments and coastwise shipments of all commodities. Internal commerce also peaked in 1960. The decline in shipments of petroleum products since that time reflects the diversion of these products to pipeline. This accounts

for the decrease since 1960. Dollar values of foreign movements are shown in Table 39.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for selected years are summarized in Table 40. Although there has been significant amounts of general cargo, the large amount of dry bulk cargo clearly establishes this as a bulk port.

d. Commodity Origins and Destinations, 1970. Presented in Table 41 is a summary of the origins and destinations of the various commodity groups for year 1970.

Table 38  
Waterborne Commerce Tonnage by Commodities, 1950-1970

PORT OF STOCKTON  
(Thousands of short tons)

| Commodity Group                      | 1950       | 1955       | 1960       | 1965       | 1970       |
|--------------------------------------|------------|------------|------------|------------|------------|
| <u>Foreign Exports</u>               |            |            |            |            |            |
| Petroleum coke                       | 0          | 4          | 171        | 273        | 496        |
| Metallic ores, non-metallic minerals | 0          | 276        | 823        | 628        | 77         |
| Grains                               | 16         | 211        | 191        | 266        | 204        |
| Farm products                        | 50         | 48         | 221        | 197        | 207        |
| Canned fruits & vegetables           | 17         | 29         | 49         | 109        | 31         |
| *Miscellaneous                       | <u>117</u> | <u>10</u>  | <u>187</u> | <u>118</u> | <u>157</u> |
| Subtotal, exports                    | 200        | 578        | 1,642      | 1,591      | 1,172      |
| <u>Foreign Imports</u>               |            |            |            |            |            |
| Molasses, inedible                   | 0          | 51         | 51         | 70         | 12         |
| Farm products                        | 0          | 0          | 0          | 27         | 27         |
| *Miscellaneous                       | <u>3</u>   | <u>19</u>  | <u>53</u>  | <u>129</u> | <u>16</u>  |
| Subtotal, imports                    | 3          | 70         | 104        | 226        | 55         |
| Total, Foreign Commerce              | 203        | 648        | 1,746      | 1,817      | 1,227      |
| <u>Coastwise Shipments</u>           |            |            |            |            |            |
| Farm products                        | 32         | 36         | 45         | 2          | 0          |
| Canned fruits & vegetables           | 119        | 136        | 101        | 0          | 0          |
| Alcoholic beverages                  | 14         | 46         | 71         | 37         | 35         |
| Miscellaneous                        | <u>12</u>  | <u>119</u> | <u>133</u> | <u>15</u>  | <u>0</u>   |
| Subtotal, shipments                  | 177        | 337        | 350        | 54         | 35         |
| <u>Coastwise Receipts</u>            |            |            |            |            |            |
| Petroleum products                   | 0          | 0          | 125        | 169        | 0          |
| Fertilizer                           | 0          | 0          | 0          | 0          | 167        |
| Miscellaneous                        | <u>21</u>  | <u>35</u>  | <u>39</u>  | <u>0</u>   | <u>0</u>   |
| Subtotal, receipts                   | 21         | 35         | 164        | 169        | 167        |
| Total, Coastwise Commerce            | 198        | 372        | 514        | 223        | 202        |

\* Itemization of miscellaneous categories on page 111.



Table 38  
Waterborne Commerce Tonnage by Commodities, 1950-1970

PORT OF STOCKTON  
(Thousands of short tons)

| Commodity Group                         | 1950      | 1955       | 1960       | 1965     | 1970     |
|-----------------------------------------|-----------|------------|------------|----------|----------|
| Total, Ocean Commerce                   | 401       | 1,020      | 2,260      | 2,040    | 1,429    |
| <u>Internal Shipments</u>               |           |            |            |          |          |
| Miscellaneous                           | 48        | 9          | 14         | 4        | 23       |
| <u>Internal Receipts</u>                |           |            |            |          |          |
| Petroleum products                      | 591       | 757        | 931        | 709      | 318      |
| Molasses, inedible                      | 0         | 0          | 0          | 76       | 153      |
| Miscellaneous                           | <u>77</u> | <u>122</u> | <u>107</u> | <u>7</u> | <u>6</u> |
| Subtotal, receipts                      | 668       | 879        | 1,038      | 792      | 477      |
| Total, Internal Commerce                | 716       | 888        | 1,052      | 796      | 500      |
| TOTAL, ALL TRAFFIC,<br>PORT OF STOCKTON | 1,117     | 1,908      | 3,312      | 2,836    | 1,929    |

Table 38  
Waterborne Commerce Tonnage by Commodities, 1950-1970

PORT OF STOCKTON  
(Thousands of short tons)

| Commodity Group                      | 1950       | 1955     | 1960      | 1965      | 1970     |
|--------------------------------------|------------|----------|-----------|-----------|----------|
| <u>Miscellaneous Foreign Exports</u> |            |          |           |           |          |
| Chemicals                            | 0          | 8        | 0         | 55        | 82       |
| Primary metals                       | 0          | 0        | 6         | 0         | 0        |
| Lumber, pulp, paper                  | 0          | 1        | 37        | 5         | 47       |
| Machinery and vehicles               | 0          | 0        | 0         | 1         | 0        |
| Miscellaneous manufacturing          | 0          | 1        | 124       | 34        | 28       |
| Food                                 | <u>117</u> | <u>0</u> | <u>20</u> | <u>23</u> | <u>0</u> |
| Total, exports                       | 117        | 10       | 187       | 118       | 157      |
| <u>Miscellaneous Foreign Imports</u> |            |          |           |           |          |
| Food                                 | 0          | 0        | 0         | 18        | 5        |
| Chemicals                            | 0          | 11       | 0         | 18        | 0        |
| Petroleum                            | 0          | 0        | 0         | 36        | 0        |
| Farm products                        | 0          | 7        | 9         | 9         | 0        |
| Primary metals                       | 0          | 0        | 10        | 20        | 3        |
| Pulp-wood                            | 0          | 0        | 1         | 2         | 0        |
| Minerals                             | 0          | 0        | 0         | 2         | 0        |
| Miscellaneous                        | <u>3</u>   | <u>1</u> | <u>33</u> | <u>24</u> | <u>8</u> |
| Total, imports                       | 3          | 19       | 53        | 129       | 16       |

Table 39  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

PORT OF STOCKTON

| Commodity Group                      | 1950          | 1955         | 1960          | 1965          | 1970          |
|--------------------------------------|---------------|--------------|---------------|---------------|---------------|
| <u>Foreign Exports</u>               |               |              |               |               |               |
| Petroleum coke                       | \$ 0          | \$ 93        | \$ 3,733      | \$ 2,866      | \$ 4,634      |
| Metallic ores, non-metallic minerals | 0             | 2,578        | 11,882        | 3,348         | 10,327        |
| Grains                               | 2,360         | 21,297       | 21,536        | 14,051        | 11,501        |
| Farm products                        | 7,485         | 7,709        | 31,781        | 26,706        | 13,393        |
| Canned fruits & vegetables           | 2,976         | 6,548        | 25,822        | 42,443        | 20,054        |
| *Miscellaneous                       | <u>21,519</u> | <u>1,392</u> | <u>25,026</u> | <u>95,583</u> | <u>4,198</u>  |
| Subtotal, exports                    | \$34,340      | \$39,617     | \$119,780     | \$184,997     | \$64,107      |
| <u>Foreign Imports</u>               |               |              |               |               |               |
| Molasses, inedible                   | \$ 0          | \$ 416       | \$ 509        | \$ 977        | \$ 175        |
| Farm products                        | 0             | 0            | 0             | 3,313         | 3,953         |
| *Miscellaneous                       | <u>1,967</u>  | <u>9,002</u> | <u>32,177</u> | <u>48,969</u> | <u>19,884</u> |
| Subtotal, imports                    | \$ 1,967      | \$ 9,418     | \$ 32,686     | \$ 53,259     | \$24,012      |
| Total, Foreign Commerce              | \$36,307      | \$49,035     | \$152,466     | \$238,256     | \$88,119      |

\* Itemization of miscellaneous categories on following page.

Table 39  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

PORT OF STOCKTON

| Commodity Group                      | 1950          | 1955         | 1960          | 1965          | 1970          |
|--------------------------------------|---------------|--------------|---------------|---------------|---------------|
| <u>Miscellaneous Foreign Exports</u> |               |              |               |               |               |
| Chemicals                            | \$ 0          | \$ 289       | \$ 0          | \$ 8,702      | \$ 1,972      |
| Primary metals                       | 0             | 0            | 425           | 0             | 25            |
| Lumber, pulp, paper                  | 0             | 401          | 6,512         | 1,853         | 819           |
| Machinery and vehicles               | 0             | 0            | 0             | 191           | 292           |
| Miscellaneous manufacturing          | 0             | 702          | 16,289        | 76,363        | 1,090         |
| Food                                 | <u>21,519</u> | <u>0</u>     | <u>1,800</u>  | <u>8,474</u>  | <u>0</u>      |
| Total, exports                       | \$21,519      | \$1,392      | \$25,026      | \$95,583      | \$ 4,198      |
| <u>Miscellaneous Foreign Imports</u> |               |              |               |               |               |
| Food                                 | \$ 0          | \$ 0         | \$ 0          | \$ 7,231      | \$ 3,776      |
| Chemicals                            | 0             | 541          | 0             | 524           | 41            |
| Petroleum                            | 0             | 0            | 0             | 735           | 16            |
| Farm products                        | 0             | 115          | 8,488         | 21,564        | 0             |
| Primary metals                       | 0             | 0            | 11,689        | 2,398         | 405           |
| Pulp-wood                            | 0             | 0            | 570           | 82            | 18            |
| Minerals                             | 0             | 0            | 0             | 269           | 0             |
| Miscellaneous                        | <u>1,967</u>  | <u>8,346</u> | <u>11,430</u> | <u>16,166</u> | <u>15,628</u> |
| Total, imports                       | \$ 1,967      | \$9,002      | \$32,177      | \$48,969      | \$19,884      |

Table 40

## Categories of Commodity Movement, 1960, 1965 and 1970

## PORT OF STOCKTON

| COMMODITY<br>GROUP                       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|------------------------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1960                                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>                    |                                          |                   |                  |                               |                |
| Petroleum coke                           |                                          | 171               |                  |                               | 171            |
| Petroleum products                       | 125                                      |                   |                  |                               | 125            |
| Metallic ores, non-<br>metallic minerals |                                          | 763               |                  |                               | 763            |
| Grains                                   |                                          | 191               |                  |                               | 191            |
| Farm products                            |                                          | 266               |                  |                               | 266            |
| Food Products                            |                                          |                   | 150              |                               | 150            |
| Molasses                                 | 51                                       |                   |                  |                               | 51             |
| Alcoholic beverages                      | 71                                       |                   |                  |                               | 71             |
| Miscellaneous                            |                                          |                   | 472              |                               | 472            |
| Subtotal                                 | 247                                      | 1,391             | 622              | 0                             | 2,260          |
| <u>Internal Traffic</u>                  |                                          |                   |                  |                               |                |
| Petroleum products                       | 931                                      |                   |                  |                               | 931            |
| Miscellaneous                            |                                          |                   | 121              |                               | 121            |
| Subtotal                                 | 931                                      | 0                 | 121              | 0                             | 1,052          |
| <u>Total Traffic</u>                     | 1,178                                    | 1,391             | 743              | 0                             | 3,312          |



Table 40

## Categories of Commodity Movement, 1960, 1965 and 1970

## PORT OF STOCKTON

| COMMODITY<br>GROUP                       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|------------------------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1965                                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>                    |                                          |                   |                  |                               |                |
| Petroleum coke                           |                                          | 273               |                  |                               | 273            |
| Petroleum products                       | 169                                      |                   |                  |                               | 169            |
| Metallic ores, non-<br>metallic minerals |                                          | 628               |                  |                               | 628            |
| Grains                                   |                                          | 266               |                  |                               | 266            |
| Farm products                            |                                          | 226               |                  |                               | 226            |
| Food products                            |                                          |                   | 109              |                               | 109            |
| Molasses                                 | 70                                       |                   |                  |                               | 70             |
| Alcoholic beverages                      | 37                                       |                   |                  |                               | 37             |
| Miscellaneous                            |                                          |                   | 244              | 18                            | 262            |
| Subtotal                                 | 276                                      | 1,393             | 353              | 18                            | 2,040          |
| <u>Internal Traffic</u>                  |                                          |                   |                  |                               |                |
| Petroleum products                       | 709                                      |                   |                  |                               | 709            |
| Molasses                                 | 76                                       |                   |                  |                               | 76             |
| Miscellaneous                            |                                          |                   | 11               |                               | 11             |
| Subtotal                                 | 785                                      | 0                 | 11               | 0                             | 796            |
| <u>Total Traffic</u>                     | 1,061                                    | 1,393             | 364              | 18                            | 2,836          |

Table 40

## Categories of Commodity Movement, 1960, 1965 and 1970

## PORT OF STOCKTON

| COMMODITY<br>GROUP                       | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|------------------------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                                          | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1970                                     |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>                    |                                          |                   |                  |                               |                |
| Petroleum coke                           |                                          | 496               |                  |                               | 496            |
| Metallic ores, non-<br>metallic minerals |                                          | 77                |                  |                               | 77             |
| Grains                                   |                                          | 204               |                  |                               | 204            |
| Farm products                            |                                          | 234               |                  |                               | 234            |
| Food products                            |                                          |                   | 31               |                               | 31             |
| Molasses                                 | 12                                       |                   |                  |                               | 12             |
| Alcoholic beverages                      | 35                                       |                   |                  |                               | 35             |
| Fertilizer                               |                                          | 167               |                  |                               | 167            |
| Miscellaneous                            |                                          |                   | 133              | 40                            | 173            |
| Subtotal                                 | 47                                       | 1,178             | 164              | 40                            | 1,429          |
| <u>Internal Traffic</u>                  |                                          |                   |                  |                               |                |
| Petroleum products                       | 318                                      |                   |                  |                               | 318            |
| Molasses                                 | 153                                      |                   |                  |                               | 153            |
| Miscellaneous                            |                                          |                   | 29               |                               | 29             |
| Subtotal                                 | 471                                      | 0                 | 29               | 0                             | 500            |
| <u>Total Traffic</u>                     | 518                                      | 1,178             | 193              | 40                            | 1,929          |

TABLE 41 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## PORT OF STOCKTON

| Commodity Group            | Tons (1,000) | Origin                  | Destination                                 |
|----------------------------|--------------|-------------------------|---------------------------------------------|
| <u>Foreign Exports</u>     |              |                         |                                             |
| Petroleum Coke             | 496          | 25 Bay Area Refineries  | 296 Japan                                   |
|                            |              | 474 Southern California | 200 Europe                                  |
| Non-Ferrous Ores           | 77           | Nevada                  | Europe                                      |
| Grains                     | 204          | Stockton                | Japan, Korea                                |
| Farm Products              | 207          | San Joaquin Valley      | 10 Hawaii                                   |
|                            |              |                         | 197 Japan                                   |
| Food Products              | 31           | 12 Stockton             | Far East                                    |
|                            |              | 19 Stockton             | Europe                                      |
| Miscellaneous              | 157          | 59 Central California   | Japan                                       |
|                            |              | 21 Central California   | Europe                                      |
|                            |              | 77 Central California   | South America                               |
| <u>Foreign Imports</u>     |              |                         |                                             |
| Molasses                   | 12           | Hawaii                  | San Joaquin Valley                          |
| Farm Products              | 27           | South America           | San Joaquin Valley                          |
| Miscellaneous              | 16           | Europe                  | San Joaquin Valley                          |
| <u>Coastwise Shipments</u> |              |                         |                                             |
| Alcoholic Beverages        | 35           | San Joaquin Valley      | Atlantic Coast                              |
| <u>Coastwise Receipts</u>  |              |                         |                                             |
| Fertilizer                 | 167          | Florida                 | Lathrop, California<br>(San Joaquin Valley) |
| Subtotal, Ocean Commerce   | 1,429        |                         |                                             |
| <u>Internal Shipments</u>  |              |                         |                                             |
| Miscellaneous              | 23           | San Joaquin Valley      | San Francisco<br>Bay Ports                  |
| <u>Internal Receipts</u>   |              |                         |                                             |
| Petroleum Products         | 318          | Bay Area Refineries     | San Joaquin Valley                          |
| Molasses                   | 153          | Bay Area                | San Joaquin Valley                          |
| Miscellaneous              | 6            | Bay Area                | Stockton                                    |
| Subtotal, Internal Traffic | 500          |                         |                                             |
| TOTAL TRAFFIC              | 1,929        |                         |                                             |

## 15. PORT OF SACRAMENTO

The Port of Sacramento is a relatively new port, first opened for deep-draft traffic in June 1963. Most of the shallow-draft tonnage destined for Sacramento River terminals at Sacramento and points above use the deep-water channel.

a. General Trends Prior to 1950. Prior to completion of the deep-draft port, shallow-draft commerce was carried on the Sacramento River to various landings on the river, with the city of Sacramento the major port on the river. This river port goes back to the gold rush days when it served as a major supply center for the northern mines. Supplies of all kinds, as well as passengers, were carried on river boats. As the valley area developed, large amounts of grain and farm products were shipped out, and general merchandise of all kinds continued to be the primary imports for many years. The advent of the internal combustion engine and the automobile created a large increase in demand for petroleum products, which were transported in oil barges to Sacramento as well as other points above and below Sacramento. During this period, shipments of grain, as well as rice, and other farm products increased. Passenger service, which was once very important, gradually declined with the competition from highway and rail, and virtually ceased altogether with the advent of World War II. More recent trends have shown a substantial reduction in deliveries of petroleum products to Sacramento and Colusa due to the construction of a pipeline from the Bay Area refineries to Sacramento and other valley cities. This resulted in substantial diversion of petroleum products from water carriers to pipeline.

b. Historic Commodity Movements, 1950-1970. Tonnage data by major commodity groups are shown in Table 42 for the 20-year period, 1950-1970, by 5-year intervals. Traffic for years 1950, 1955, and 1960 represents total Sacramento River barges (internal) traffic. Data for 1965 and 1970 show ocean commerce as well. It is evident that ocean commerce increased significantly from 1965 to 1970, reflecting large foreign exports. Coast-wise shipments were also up. On the other hand, internal traffic appears to have reached a peak in 1965, and then to have declined significantly due to the diversion of petroleum products from waterway transportation to pipeline. Dollar value of foreign movements are shown in Table 43.

c. Categories of Commodity Movement, 1960-1970. Commodity traffic for the four categories of traffic for the years 1960, 1965, and 1970 are summarized in Table 44. The large bulk cargo shipments emphasizes the bulk cargo nature of this port.

d. Commodity Origins and Destinations, 1970. Presented in Table 45 is a summary of the origins and destinations of the various commodity groups for year 1970.



Table 42  
Waterborne Commerce Tonnage by Commodities, 1950-1970

PORT OF SACRAMENTO  
(Thousands of short tons)

| Commodity Group            | 1950              | 1955     | 1960     | 1965      | 1970      |
|----------------------------|-------------------|----------|----------|-----------|-----------|
| <u>Foreign Exports</u>     |                   |          |          |           |           |
| Rice                       | Sacramento River  |          |          | 222       | 299       |
| Grains                     | Deepwater ship    |          |          | 84        | 35        |
| Farm products              | channel opened    |          |          | 84        | 62        |
| Forest products            | during June 1963. |          |          | 6         | 530       |
| Miscellaneous              |                   |          |          | <u>10</u> | <u>87</u> |
| Subtotal, exports          |                   |          |          | 406       | 1,013     |
| <u>Foreign Imports</u>     |                   |          |          |           |           |
| Miscellaneous              |                   |          |          | 1         | 9         |
| Total, Foreign Commerce    |                   |          |          | 407       | 1,022     |
| <u>Coastwise Shipments</u> |                   |          |          |           |           |
| Farm products              |                   |          |          | 29        | 122       |
| Miscellaneous              |                   |          |          | <u>12</u> | <u>0</u>  |
| Subtotal, shipments        |                   |          |          | 41        | 122       |
| <u>Coastwise Receipts</u>  |                   |          |          |           |           |
| Miscellaneous              |                   |          |          | 1         | 0         |
| Total, Coastwise Commerce  | 0                 | 0        | 0        | 42        | 122       |
| Total, Ocean Commerce      | 0                 | 0        | 0        | 449       | 1,144     |
| <u>Internal Shipments</u>  |                   |          |          |           |           |
| Farm products              | 252               | 219      | 218      | 140       | 44        |
| Miscellaneous              | <u>40</u>         | <u>9</u> | <u>9</u> | <u>9</u>  | <u>11</u> |
| Subtotal, shipments        | 292               | 228      | 227      | 149       | 45        |

\* Footnotes at end of table

Continued

Table 42  
Waterborne Commerce Tonnage by Commodities, 1950-1970

PORT OF SACRAMENTO  
(Thousand of short tons)

| Commodity Group                          | 1950      | 1955     | 1960     | 1965      | 1970                |
|------------------------------------------|-----------|----------|----------|-----------|---------------------|
| <u>Internal Receipts</u>                 |           |          |          |           |                     |
| Petroleum products                       | 1,075     | 1,683    | 1,479    | 1,606     | 188                 |
| Building cement                          | 0         | 0        | 101      | 113       | 39                  |
| Farm products                            | 6         | 1        | 0        | 63        | 0                   |
| Sand, gravel, rock                       | 84        | 193      | 185      | 29        | 157                 |
| Miscellaneous                            | <u>41</u> | <u>1</u> | <u>0</u> | <u>51</u> | <u>0</u>            |
| Subtotal, receipts                       | 1,206     | 1,878    | 1,765    | 1,862     | 384                 |
| Total, Internal Commerce                 | 1,498     | 2,106    | 1,992    | 2,011     | 429 <sup>1/</sup>   |
| TOTAL ALL TRAFFIC,<br>PORT OF SACRAMENTO | 1,498     | 2,106    | 1,992    | 2,460     | 1,573 <sup>1/</sup> |

<sup>1/</sup> Excludes 2,717,000 tons of sand used for freeway fill on Interstate 5.

Table 43  
Value of Imports and Exports, 1950-1970  
Thousands of Dollars

PORT OF SACRAMENTO

| Commodity Group         | 1950 | 1955             | 1960 | 1965          | 1970                       |
|-------------------------|------|------------------|------|---------------|----------------------------|
| <u>Foreign Exports</u>  |      |                  |      |               |                            |
| Rice                    |      | Sacramento River |      | \$30,594      | \$40,310                   |
| Grains                  |      | Deepwater ship   |      | 3,754         | 2,534                      |
| Farm products           |      | channel opened   |      | 5,187         | 6,431                      |
| Forest products         |      | during June 1963 |      | 376           | 10,990                     |
| Miscellaneous           |      |                  |      | <u>14,518</u> | <u>3,004</u> <sup>1/</sup> |
| Subtotal, exports       |      |                  |      | \$54,429      | \$63,269                   |
| <u>Foreign Imports</u>  |      |                  |      |               |                            |
| Miscellaneous           |      |                  |      | \$ 1,160      | \$ 3,042 <sup>2/</sup>     |
| Total, Foreign Commerce |      |                  |      | \$55,589      | \$66,311                   |

1/ Chemicals; 6,000 tons, \$1,039 thousand; Machinery and manufacturing the balance.

2/ Food; 2 tons, \$1,500 thousand; Pulp 6 tons, \$775 thousand.

Table 44

## Categories of Commodity Movement, 1960, 1965 and 1970

## PORT OF SACRAMENTO

| COMMODITY<br>GROUP                                | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|---------------------------------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                                                   | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1960                                              |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u> (no ocean commerce in 1960) |                                          |                   |                  |                               |                |
| <u>Internal Traffic</u>                           |                                          |                   |                  |                               |                |
| Petroleum products                                | 1,479                                    |                   |                  |                               | 1,479          |
| Building cement                                   |                                          | 101               |                  |                               | 101            |
| Farm products                                     |                                          | 218               |                  |                               | 218            |
| Sand, gravel, rock                                |                                          | 185               |                  |                               | 185            |
| Miscellaneous                                     |                                          |                   | 9                |                               | 9              |
| <u>Total Traffic</u>                              | 1,479                                    | 504               | 9                | 0                             | 1,992          |

Table 44

## Categories of Commodity Movement, 1960, 1965 and 1970

## PORT OF SACRAMENTO

| COMMODITY<br>GROUP      | Method of Commodity Movement, 1,000 Tons |                   |                  |                               |                |
|-------------------------|------------------------------------------|-------------------|------------------|-------------------------------|----------------|
|                         | Petroleum<br>& Liquid<br>Bulk            | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo |
| 1965                    |                                          |                   |                  |                               |                |
| <u>Ocean Commerce</u>   |                                          |                   |                  |                               |                |
| Rice                    |                                          | 222               |                  |                               | 222            |
| Grains                  |                                          | 84                |                  |                               | 84             |
| Farm products           |                                          | 113               |                  |                               | 113            |
| Forest products         |                                          |                   | 6                |                               | 6              |
| Miscellaneous           |                                          |                   | 24               |                               | 24             |
| Subtotal                | 0                                        | 419               | 30               |                               | 449            |
| <u>Internal Traffic</u> |                                          |                   |                  |                               |                |
| Petroleum products      | 1,606                                    |                   |                  |                               | 1,606          |
| Building cement         |                                          | 113               |                  |                               | 113            |
| Farm products           |                                          | 203               |                  |                               | 203            |
| Sand, gravel, rock      |                                          | 29                |                  |                               | 29             |
| Miscellaneous           |                                          |                   | 60               |                               | 60             |
| Subtotal                | 1,606                                    | 345               | 60               |                               | 2,011          |
| <u>Total Traffic</u>    | 1,606                                    | 764               | 90               |                               | 2,460          |



Table 44

## Categories of Commodity Movement, 1960, 1965 and 1970

## PORT OF SACRAMENTO

| Method of Commodity Movement, 1,000 Tons |                               |                   |                  |                               |                   |
|------------------------------------------|-------------------------------|-------------------|------------------|-------------------------------|-------------------|
|                                          | Petroleum<br>& Liquid<br>Bulk | Dry Bulk<br>Cargo | General<br>Cargo | Containerized<br>& Lash Cargo | Total<br>Cargo    |
| 1970                                     |                               |                   |                  |                               |                   |
| <u>Ocean Commerce</u>                    |                               |                   |                  |                               |                   |
| Rice                                     |                               | 299               |                  |                               | 299               |
| Grains                                   |                               | 35                |                  |                               | 35                |
| Farm products                            |                               | 184               |                  |                               | 184               |
| Forest products                          |                               |                   | 530              |                               | 530               |
| Miscellaneous                            |                               |                   | 95               | <u>1</u>                      | <u>96</u>         |
| Subtotal                                 | <u>0</u>                      | <u>518</u>        | <u>625</u>       | <u>1</u>                      | <u>1,144</u>      |
| <u>Internal Traffic</u>                  |                               |                   |                  |                               |                   |
| Petroleum products                       | 188                           |                   |                  |                               | 188               |
| Building cement                          |                               | 39                |                  |                               | 39                |
| Farm products                            |                               | 44                |                  |                               | 44                |
| Sand, gravel, rock                       |                               | 157               |                  |                               | 157 <sup>1/</sup> |
| Miscellaneous                            |                               |                   | <u>1</u>         | <u>—</u>                      | <u>1</u>          |
| Subtotal                                 | <u>188</u>                    | <u>240</u>        | <u>1</u>         | <u>0</u>                      | <u>429</u>        |
| <u>Total Traffic</u>                     | <u>188</u>                    | <u>758</u>        | <u>626</u>       | <u>1</u>                      | <u>1,573</u>      |

<sup>1/</sup>Excludes 2,717,000 tons sand used for freeway fill on Interstate 5.

TABLE 45 - COMMODITY ORIGINS AND DESTINATIONS, 1970

## PORT OF SACRAMENTO

| Commodity Group                         | Tons (1,000) | Origin               | Destination       |
|-----------------------------------------|--------------|----------------------|-------------------|
| <u>Foreign Exports</u>                  |              |                      |                   |
| Rice                                    | 299          | Sacramento Valley    | Far East          |
| Grains                                  | 35           | Sacramento Valley    | Japan             |
| Farm Products                           | 62           | Sacramento Valley    | Japan             |
| Forest Products                         | 530          | Central Sierra Basin | Japan             |
| Miscellaneous                           | 87           | 53 Sacramento Valley | Japan, Far East   |
|                                         |              | 34 Sacramento        | Europe            |
| <u>Foreign Imports</u>                  |              |                      |                   |
| Miscellaneous                           | 9            | British Columbia     | Sacramento        |
| <u>Coastwise Shipments</u>              |              |                      |                   |
| Farm Products                           | 122          | Sacramento Valley    | Puerto Rico       |
| <u>Coastwise Receipts</u>               | <u>0</u>     |                      |                   |
| Subtotal, Ocean Commerce                | 1,144        |                      |                   |
| <u>Internal Shipments</u> <sup>1/</sup> |              |                      |                   |
| Farm Products                           | 44           | Sacramento Valley    | Sacramento        |
| Miscellaneous                           | 1            | Sacramento Valley    | San Francisco     |
| <u>Internal Receipts</u>                |              |                      |                   |
| Petroleum Products                      | 188          | Bay Area Refineries  | Sacramento Valley |
| Building Cement                         | 39           | Redwood City         | Sacramento Valley |
| Sand, Gravel, Rock                      | <u>157</u>   | San Rafael           | Sacramento Valley |
| Subtotal, Internal Traffic              | 429          |                      |                   |
| TOTAL TRAFFIC                           | 1,573        |                      |                   |

<sup>1/</sup> Excludes 2,717,000 tons of sand used for freeway fill on Interstate Highway 5.

## APPENDIX A

### PRODUCTS WITHIN EACH COMMODITY GROUP

1. The commerce in each harbor or project area was analyzed and aggregated into the major commodity categories for each harbor or area. Commodities varied greatly from harbor to harbor, but in the usual case, the more important commodities were designated, and the remainder were classified under the "miscellaneous" group. The total for the San Francisco Bay Harbor complex is a summary of the ten individual study areas. This procedure tends to underestimate specific line items, as an item may be important enough to be itemized in a particular port, but thrown into miscellaneous cargo in another. Consequently, adding up the study area commodity totals will not reflect all the tonnage of a given commodity; this is not, however, considered to be a significant deficiency.

2. Commodity classifications follow as close as possible to groups set forth in the Corps of Engineers Waterborne Commerce publications. These individual commodity groups are discussed under broad headings as follows:

#### a. Agricultural Products

(1) Food Products. This group consists of edible commodities put for human consumption. It corresponds generally to the "Food and Kindred Products" group in the waterborne commerce code, except for certain major line item exceptions.

(2) Farm Products. Except for rice and grains, which have been frequently listed as a line item, this group corresponds generally to the "Farm Products" group in the waterborne commerce code.

(3) Canned Fruit, Sugar, Molasses. When constituting major items, they have been separated from the food products group and listed as a line item.

b. Chemical Products.

(1) Chemicals. The chemical products group corresponds generally to the "Chemicals and Allied Products" group of the waterborne commerce code. It includes a wide variety of industrial chemicals, petro-chemicals, paints, varnishes, insecticides, disinfectants, fertilizers, acides, etc. Where significant, a group, such as fertilizer, has been itemized.

(2) Salt, Gypsum, Plaster. This group has been included with the Chemical Products group. In several harbors, these are important commodities and are given individual treatment.

c. Petroleum Products. This large group has been divided according to the waterborne commerce code.

(1) Petroleum Products. This group includes petroleum coke, gasoline, kerosene, distillate fuel oil, residual fuel oil, lubricating oils and greases, and other petroleum products.

(2) Petroleum Crude. This commodity has been given separate designation when the tonnage is significant.

d. Metal Products.

(1) Iron and Steel Scrap, and Iron Ore. These commodities are self-explanatory. While they were kept separate for the individual study area, they have been grouped together in the summary.

(2) Primary Metals. This group corresponds to the primary metal products group of the waterborne commerce code. It includes such items as iron and steel bars, rods, angles, shapes, sheet pilings; iron and steel plates and sheets; iron and steel pipes and tubes; pig iron, non-ferrous metals, copper and copper alloys, and other items.

(3) Metallic Ores. This group corresponds to the metallic ores group of the waterborne commerce code, with the exception of the non-ferrous subgroup. In actual practice, it consisted primarily of iron ore exports.

(4) Non-Ferrous Ores.

e. Non-Metallic Minerals. As used herein, this group includes minerals that their magnitude does not warrant separation. It consists of clays, salt, sand, gravel, and stone.

f. Department of Defense Controlled Cargo. This is limited to the waterborne commerce code of this name. It consists of cargoes exported on Department of Defense controlled vessels (other than goods for the use of U.S. Armed Forces abroad) and non-Department of Defense shipments of military component items.

g. Lumber Products.

(1) Pulp and Paper Products. Corresponds to the waterborne commerce code "pulp, paper, and allied products."

(2) Lumber and Wood Products. Consists of logs and lumber of all kinds.



h. Building Cement; Sand and Gravel; Stone, Clay, and Glass, and Marine Shells. These were identified as a line item when the cargo was significant.

i. Miscellaneous Cargo. With each harbor or waterway area, after all the significant cargo items were identified, the remaining "residual" tonnage was classified as miscellaneous.

## APPENDIX B

### DERIVATION OF DOLLAR VALUES

1. The primary change engendered by comments received on the draft of this report has been the addition of dollar values to the commodity tables for foreign commerce. Dollar values for domestic commerce are unavailable, simply because no regulatory agency requires that coastwise traffic be reported for tax purposes.
2. Based on U.S. Customs records, the U.S. Census publishes the dollar values of foreign commerce for each commodity by port of entry and port of lading.
3. For the years 1955 and 1960, the Bank of America, NT and SA<sup>1/</sup>, published the census data for the San Francisco Customs District as a whole. This district includes the ten ports for which tonnage data has been gathered for the San Francisco Bay In-Depth Study. Using these books average price per short ton for each commodity was calculated for the years 1955, 1960, and 1965; they were multiplied by the port-to-port tonnage figure in the Waterborne Commerce Statistics for the corresponding year. Then the values were summed by commodity category to match the tonnage in this report.
4. 1970 dollar values could not be developed by this method because the Bank of America no longer publishes the data. For 1970, a tonnage and value summary by commodity by port from the Census IA 305-705 series was

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<sup>1/</sup> Foreign Trade Through the San Francisco Customs District, Management Reference Service, Bank of America, various years.

graciously made available by Dr. Shanti Vora, Port of Oakland. The figures were aggregated into commodity categories by port.

5. Occasional discrepancies between Waterborne Commerce Statistics, Bank of America, i.e., Census data, and Framework historic tonnages were reconciled based on experience with these data. Wherever possible, Framework tonnages were adhered to.

6. Note also that pursuant to suggestions from review of the first draft, the large miscellaneous categories in the commodity tables for San Francisco, Oakland, Richmond and Stockton have been broken out into separate tables following the main table.

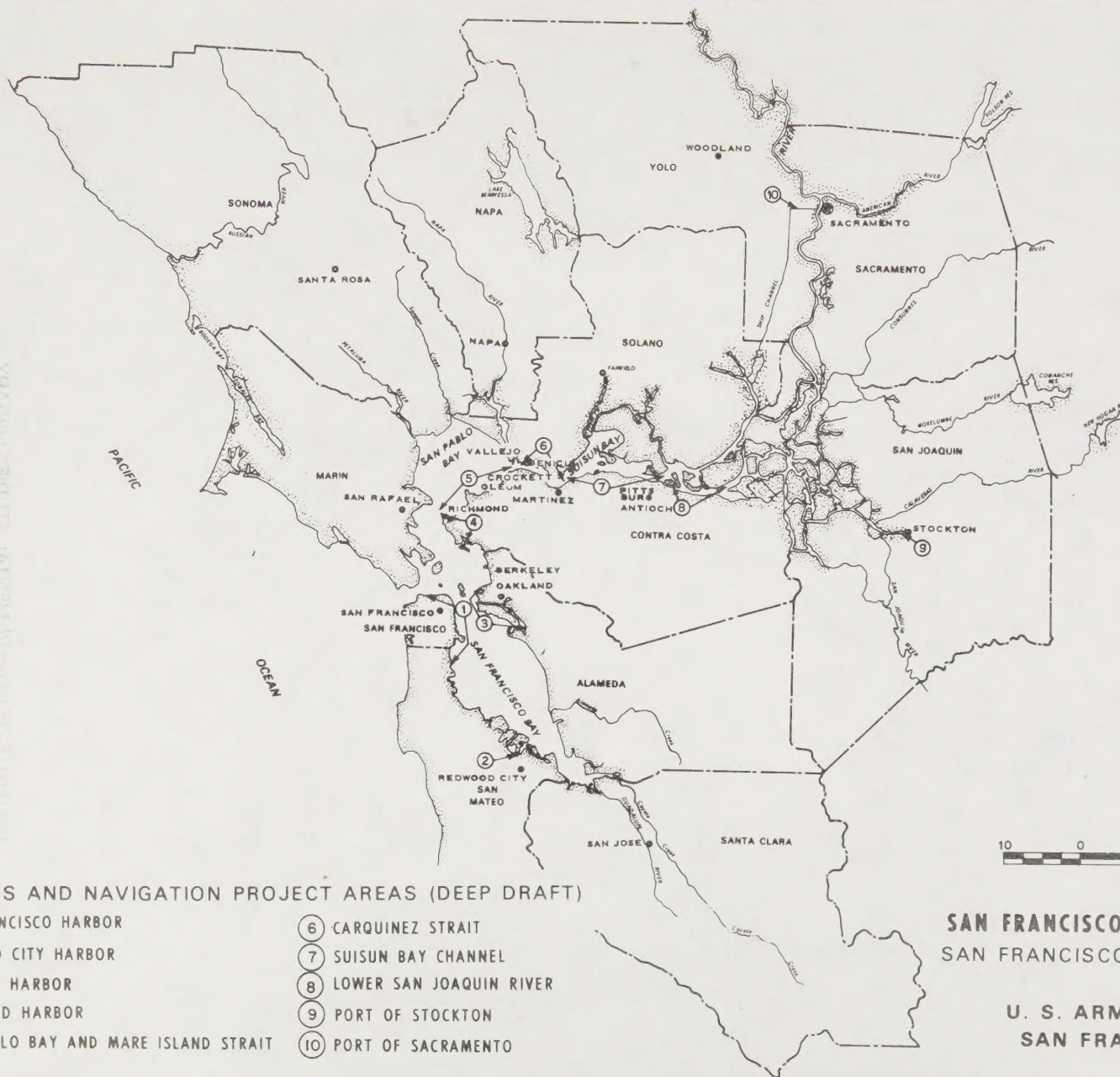
## APPENDIX C

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# HARBORS AND NAVIGATION PROJECT AREAS (DEEP DRAFT)

- |                                        |                           |
|----------------------------------------|---------------------------|
| ① SAN FRANCISCO HARBOR                 | ⑥ CARQUINEZ STRAIT        |
| ② REDWOOD CITY HARBOR                  | ⑦ SUISUN BAY CHANNEL      |
| ③ OAKLAND HARBOR                       | ⑧ LOWER SAN JOAQUIN RIVER |
| ④ RICHMOND HARBOR                      | ⑨ PORT OF STOCKTON        |
| ⑤ SAN PABLO BAY AND MARE ISLAND STRAIT | ⑩ PORT OF SACRAMENTO      |

**SAN FRANCISCO BAY AREA HARBOR SYSTEM**  
**SAN FRANCISCO BAY AREA IN-DEPTH STUDY**  
**CALIFORNIA**  
**U. S. ARMY ENGINEER DIVISION**  
**SAN FRANCISCO, CALIFORNIA**  
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